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CANADA BUILDS
HOW THE ARCHITECT HELPS INDUSTRY BUILD BETTER

By JOHN CAULFIELD SMITH, M.R.A.I.C.

ARCHITECT'S DRAWINGS ACCURATE

After preliminary sketches are approved by owner, architect proceeds with final drawings. These are neat, complete, easy to read. They give dimensions, schedules and other information in detail, help to guard against misunderstandings and possibility of charges for extras.

SPECIFICATIONS CAREFULLY WRITTEN

Architect works as closely with the owner in preparing the specifications as he does in preparing the drawings. Specifications cover items relating to construction which cannot be shown conveniently on the drawings. Both drawings and specifications are documents that form part of the contract.

FINDS RIGHT SOLUTION

Architect will make preliminary sketches — often dozens — until satisfied he's found the best solution to the owner's problem. Looking ahead, he provides for future expansion as well as present needs. Being familiar with modern industrial practices, no time is lost explaining them to him.

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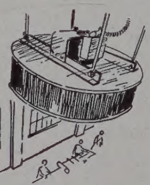

Projection heater, with accurate thermostatic control, is mounted high above the assembly line. Architect knows important influence comfort has on productivity, uses appropriate heating equipment to keep employees warm and snug, even though storms or gales may be raging outside.

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These suggestions are supplied through the cooperation of the Ontario Association of Architects showing ways in which an architect serves Canada's industrial expansion program. Additional suggestions, designed to help you, are contained in the booklet entitled:

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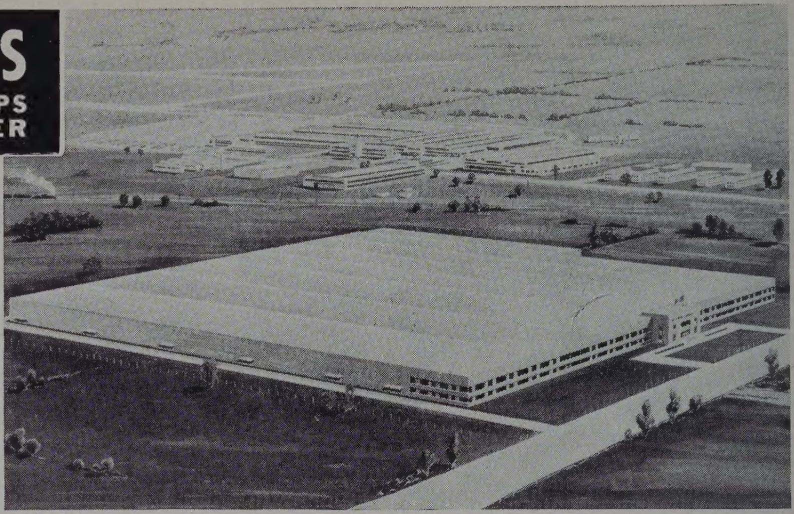

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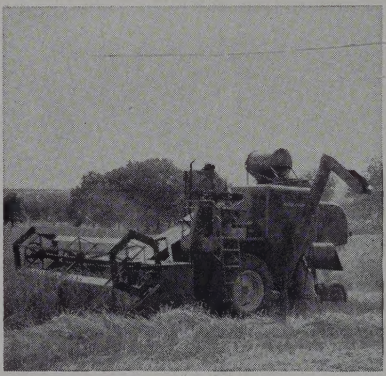

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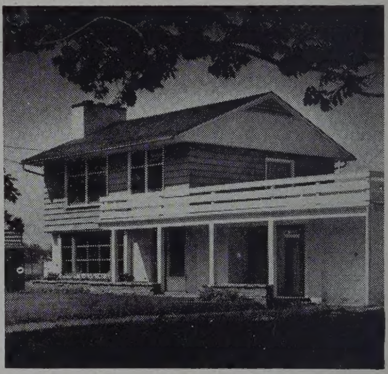

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RAIC JOURNAL

Serial No 320, Vol. 29, No 4

ROYAL ARCHITECTURAL INSTITUTE OF CANADA

All correspondence should be addressed to the Editor

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EDITORIAL

WE HAVE NO DESIRE to steal the thunder of either the outgoing or the incoming president, but the *Journal* is bound to record that, in the period in office of Mr John Roxburgh Smith, a headquarters was established in Ottawa for the Royal Architectural Institute of Canada. For too long, the RAIC has been a cuckoo sharing the nest of the Ontario Association or the Quebec Association in Montreal. How generous the PQAA was, we do not know, but the little office off the OAA was of a kind that would not look extravagant to the young architect starting in practice without a job. It was so ridiculous that the most vivid imagination could not conceive it to be even symbolic of the professional home of over twelve hundred architects in Canada. We have not seen the new office, but the mere fact of its separate and independent existence in the capital gives it dignity and importance. Other and older institutions may have their Octagon or their mansion in Portland Place. We have nothing, as yet, faintly resembling those establishments, but the generation of architects now in the schools may live to see an actual headquarters building in Ottawa. It should also be recorded that we have a new secretary in Mr Cyril Carroll. We wish him well in his new job. It is pleasant to see one's old students rising to positions of distinction, and we count it no mean distinction to be secretary to the Royal Architectural Institute of Canada.

We believe it already the time, if not actually late, to build up a collection of portraits of past presidents. Many, happily, are still alive and have the strength to sit for their portraits. The paintings of presidents that used to hang in Conduit Street, and, probably, now hang in Portland Place, suggest a tradition of service that is not lost on the young architect. Some day, we shall have our building, and it would be unfortunate if pictures of P.P.'s were hashed up from old photographs. We would hope that, if such a scheme were feasible and a fund were started, that a well-informed and intelligent committee would be set up to deal with artists. The pictures, as well as the presidents, should add lustre to the rooms in which they are hung. They could be a collection of stuffed shirts that would provide mirth for the young for generations to come, and mirth, at such a price, would defeat our idea of service at the highest level.

Our recollection of the past presidents of the RIBA is vague, but we seem to remember an air of informality in their portraits. It would be appropriate if, in some, the hand rested on a broken Ionic column or if, in the distance, a gothic ruin lent enchantment to the view. We are clear only on a Colcutt or a Hamp who stands, full length, in a dressing gown. In 1941, we intended making a pilgrimage to see that portrait, but London provided greater attractions. Appropriate, to our retiring president, would be the broad red sash of the *coureur de bois* because, of Johnny Smith, it has been said he is the "Scot qui comprend bien l'esprit Quebecois". He has been a truly great president, and one greatly admired by his colleagues. It would not be too strong a word to say greatly loved. In few Canadians are the Gaelic and the Gallic so inextricably mingled that the tongue of the one, however Glaswegian in its accent, slips, without pause, into that of the other. Indeed, we have often wondered how our president would have addressed a dinner of the RIBA had he been a guest there during his period of office. To hear him say "Monsieur le president, mesdames, messieurs, . . . " would be something long to remember.

We lose, in his retirement from the presidency, a great ambassador—as much to the English-speaking as to the French-speaking architects of Canada. Not the least of his achievements is the establishment of an RAIC office in Ottawa. May he live long to see it prosper.

FRED LASSERRE

THE DESIGN OF SCHOOL BUILDINGS

INEVITABLY THERE is one conclusion arrived at when making a survey of school design in any part of our country or of the United States: the technical aspects of design have been competently and often brilliantly resolved. Equally inevitably the question arises: have the human and aesthetic aspects of design received the same loving and masterly attention?

Studying our schools in British Columbia, typical of the remainder of Canada, we see that we are recipients of an heritage, and are part of a continuum. Both have reached us principally through the technological apparatus of the United States. There is unfortunately a strong tendency to adulate every new technical device, and we readily call "new" and "original" any school which has a new system of classroom layout, of controlling the sun, of admitting light into its innards, of eliminating walls and of regulating its heating. The so-called "new schools" in the United States and here are not really "new"; they carry on a tradition which was started in England and Europe some thirty to forty years ago, and reached its peak in the years between the war, particularly around 1930. We have given them a metallic or economic technological glamour, and we have been brilliant in doing this. However, we can see that the Ernst May Schools in Frankfurt and other pavilion schools built during the Weimar Republic, the Suresnes School by Beaudouin and Lods, the Duiker School in Amsterdam, the Villejuif School by Lurcat, the English open verandah schools of thirty to forty years and the Impington School by Fry and Gropius, and the many simple Swiss schools of fifteen to twenty years ago, all provide the prototype for the schools designed by Kump, by Perkins, Wheeler and Will, and by other outstanding American school architects.

To be objective in our evaluation of design, we must establish certain reference gauges by which we can evaluate design. It is not sufficient to say that good design is wanted. The General Motors Research Centre is a well designed building, but one could not say that it offers a design prototype for a school. I suggest that we look for good school design in those buildings which have succeeded in becoming an integral part of the democratic pedagogic process. The child's education should not be carried on "in schools" – it should be furthered by the school, and the school should be designed to that end. A well-designed school, in our age, should presume its technological competence. We have always assumed that a building was capable of standing up and this has not been considered any special virtue of design, any more than that a stair should be continuous. Economy has always been one of the criteria of great buildings. This does not mean that economy produces great buildings. Unfortunately, architects today frequently confuse the two. It is commonplace for two architects, when meeting, to compare the costs of schools they have recently completed as a gauge to the success of their buildings. They relate how they have been able to reduce costs here and there. Very seldom do they say a word about the effect they have created by their building to assist the pupil in understanding his community and world. Economy is important, and maximum effect with the least apparent effort and cost is essential, yet the impression of the building on the child, the teaching it does by itself and the partnership it offers to the teacher, is surely the prime function of the building and should be the first concern of the architect.

One would not expect that the architect should be required to attend a college of education prior to designing a school – nor that the School Board or Superintendent should study architecture prior to having their school built. However, a little of both might well be of use. I think the school architect will agree that a more knowledgeable client would assist him in producing a better piece of architecture. The architect normally studies the pedagogic procedure which his building will house. The type of investigation which is usually overlooked and which the designer might find of real assistance in producing a good piece of school architecture is that which deals with educational heritage.

Education is not merely a technical phenomenon of our age. This is probably all that it means to the busy commissioned architect of today who promises to have the drawings all ready in a month and resolves the primary technical problems. It may be that he is successful in producing a fine building; he may even win a medal for it. Yet one will wonder why the building seems impersonal, why it lacks childlike humour and physical and psychological scale, and why it is so very diagrammatic, so unlike the average child's whimsicality. Again, we miss in the building what is most essential.

Perhaps our school buildings will have more humility

and be more appropriate when we realize that we are dealing with an important educational continuum to which the great minds of past and present have contributed. Throughout civilized history, education has received, next to religion, philosophy, and sex, the most attention of those concerned with the happiness of mankind. The Great Greeks contributed an influence out of proportion to their 600,000 population through the writing and teaching of Socrates, Xenophon, Plato and Aristotle. We can discern a contemporary disciple in reading Herbert Read's "Education Through Art". Then came the Romans, Cicero, Seneca and Quintilian, who adapted the Greeks' ideas to the Roman scene. The Christian Church, as had the priests in most civilized countries previously, took it upon itself to carry on the task of educating, which until the Reformation and Renaissance was largely concerned with preparation for the hereafter. The formalism of the Middle Ages continued through the humanistic education of the Renaissance until the eighteenth century revolt led by J. J. Rousseau. His appeal to return to nature, to doing things the natural way, to permitting the child's development according to its nature, sounds very familiar to parents today.

The "father of modern primary education", Swiss Johann Heinrich Pestalozzi, expounded principles of education which followed what Rousseau had propounded to extremes. Pestalozzi, however, was more concerned with pedagogy. He believed that the development of a rich sensory background was necessary in order to give real meaning to abstract statements and theories. Genuine knowledge was derived through first-hand experience. Herbart and Froebel followed Pestalozzi and carried his work further. The former was concerned about the presentation of subject matter which he proposed should be in five steps, still frequently used — even in Schools of Architecture: preparation, presentation, association, systemization and application. Froebel introduced the kindergarten idea.

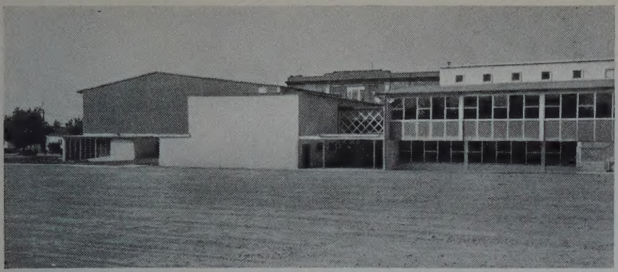
In North America, John Dewey has carried on this tradition by elaborating the concept of education as "a reconstruction or reorganization of meaningful experience by means of creative intelligence applied in purposeful activity". He thought of school as "life", not "a preparation for life", and the teacher was an intelligent director of the child's purposeful activities to help the child relate these to society and hence to the social problems of his day. Herbert Spencer, father of our technical schools, deviated to emphasize need for the teaching of more sciences and technical skills to prepare the pupil for his future employment. In general, it is correct to say that in elementary and, to a great extent, in secondary school education the exponents of the Dewey-Herbert Read school of thought have a major influence. More and more we realize that technical skills are no substitute for knowledge and ability to apply one's mind to human problems and creative activity.

Since the time of the Reformation, when the state began to step in and when public schools were first established, the architect has had an opportunity to give architectural expression to education. Previously schools had usually been built as part of the Religious group of buildings and conforming to their design, as was fitting. It is only recently that schools have been given their rightful place in the hierarchy of building types. Next to buildings for devotion and inspiration, they have every right in our democratic countries to the most prominent and important place on our community plans, and among our civic buildings. Here the wars and peace of the future are being shaped; here we create the successful collaborators and the anarchistic individualists, the good citizens and the social outcasts, the happy and the unhappy families of to-morrow. This is where the society and the common happiness we want is formed. What more important architectural task is there than to take part in this undertaking to create and shape the world as it should be?

What architectural challenge is greater than to contribute through our school building a knowledge of good architecture, a love for buildings because of the enjoyable physical and psychological experience produced by the building, a love for learning because of the close integration between child and education created by the building's design and detailing, an excitement for visual knowledge as a result of aesthetic qualities given to the building by its architecture, and the collaboration of craftsmen, painters, sculptors, industrial designers and landscape architects?

Architects in British Columbia — and generally in Canada — are not unaware of their responsibility towards and of the challenge offered by buildings for Education. We are going along in our own Canadian way, passing through all the stages Europe passed through years ago — making the same mistakes and reaching the same conclusions. We first simplified our designs and found virtue in reducing the appearance of the building to walls, windows, doors and covered areas. Of course, we were helped in this by the School Board's demands, the Board of Education's building standards, and the almighty dollar. We have erected a large group of bleak schools whose virtue is primarily that they have brought more light and better plumbing to our school plants. We then looked into the improvement of this architectural paucity. An answer was thought to be found in the use of technical innovations. They were considered safe and design improvements could be computed by slide rule, board feet, pounds, light-

Use of Native Materials
Ridgeview Elementary School, West Vancouver, B.C.
Sharp & Thompson, Berwick, Pratt, Architects



The Search for an Architecture
Lord Byng Junior-Senior High School, Vancouver, B.C.
Gardiner and Thornton, Architects

meters, thermometers and audio-meters. We introduced reflective glass blocks, sun controls, clerestorey lighting, fluorescent lights, inverted trusses and lally columns, to name only a few of these technical innovations. We also developed a passion for local materials, they were cheaper. This new world of scientific opportunity and materials blinded us to what was happening to our plans, some of which became incredibly complicated and distorted.

Our few experiments with pavilion or individual semi-detached classroom types were soon put in their place by the dollar – and by the extended unsupervised lengths of corridors.

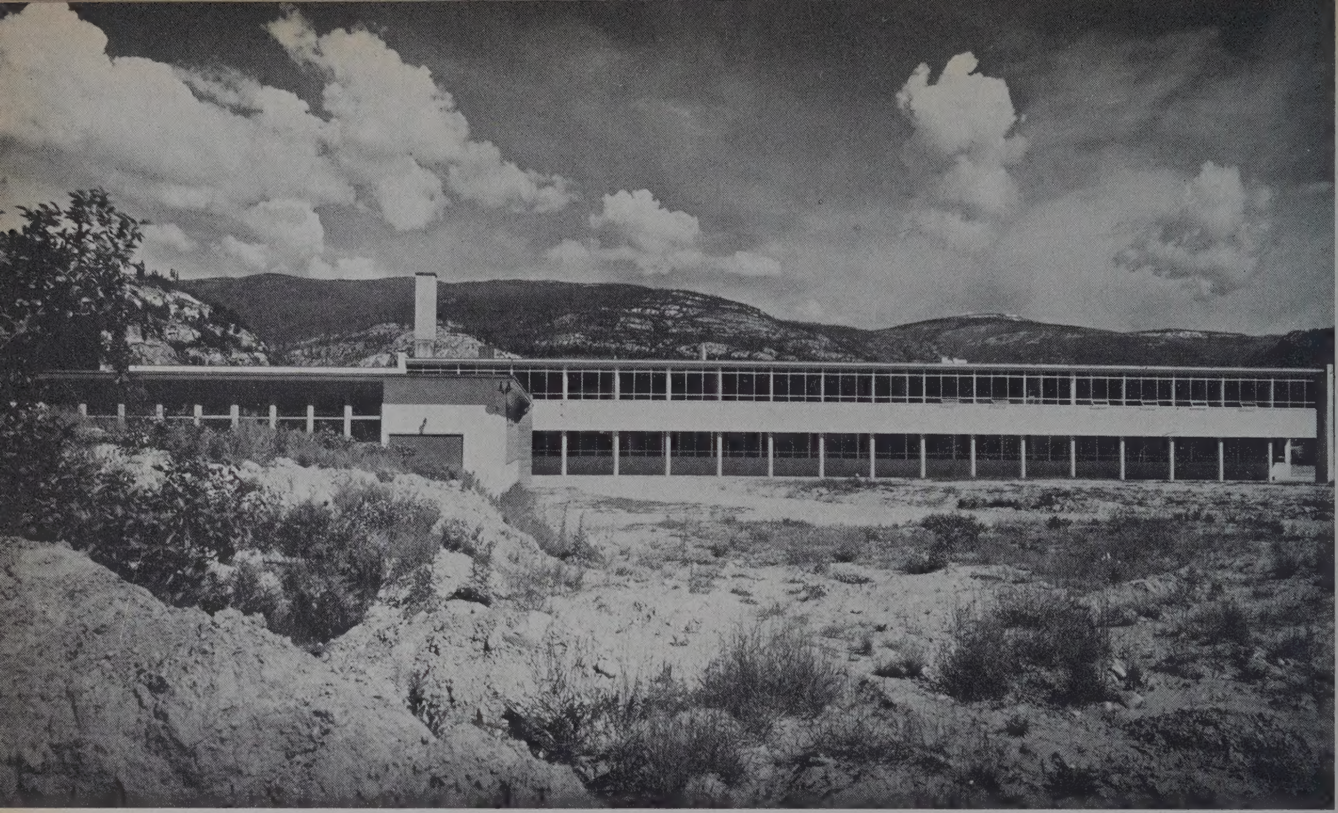
Finally, we were left with some architects who were still disgruntled with current school design and who are making every effort to re-find architecture. Across Canada, a few firms, some of which have led developments in School Design in British Columbia, are accepting what has been done to bring buildings technologically up to date, and are attending to the job of education through architecture. They are insisting on better materials, on space for its own sake, on the introduction of decorative motives which will bring joy and affection to the child, scaled to his age interests. An increasing number of architects throughout Canada are learning to achieve these ends and we can now look ahead to a slow re-assertion of the architect's responsibility, first in telling the School Boards what sort of building they should have to carry out their total educational aims, and secondly in giving human qualities and cultural meaning to that building.

There may be economic difficulties ahead of any architect who proposes that the building should be more than a technical shell, but after speaking to a number of school authorities I find that they are proud of two things: a school plant works well, and human touches and qualities which keep the school from being humdrum. If architects would realize more that the educational theories of Canada were born in Europe many years ago, and that we are merely continuing a process which is largely world wide, we would gain confidence and insist on better quality in School Buildings – and I do not mean only better blackboards.

We are already building our own regional traditions. Canadian architects are producing schools which are among the finest on the North American continent. But this is not where we will be willing to stop. We must try to match the very fine detailing and equipment of Swedish schools, the architectural dignity and clarity of plan of Brechbuhler's magnificent trades' school at Bern, and the informal charm and fine scale, landscaping and decorative features of the Felsberg School in Lucerne, or the human quality of the Crow Island School, an outstanding American example.

As I said in my opening remarks, the mastery of technical aspects of design by architects has been achieved and now the harder struggle for mastery of emotional, spiritual and education qualities must be faced. In British Columbia, and across the country, this matter is receiving attention. I wish to submit that school design as a link between the design of homes and of other civic buildings is eminently important, both as a community responsibility and as an educational need. Give the pupils an environment which they understand and learn to love, and they will later ask for the same qualities in other parts of the community and its structures.

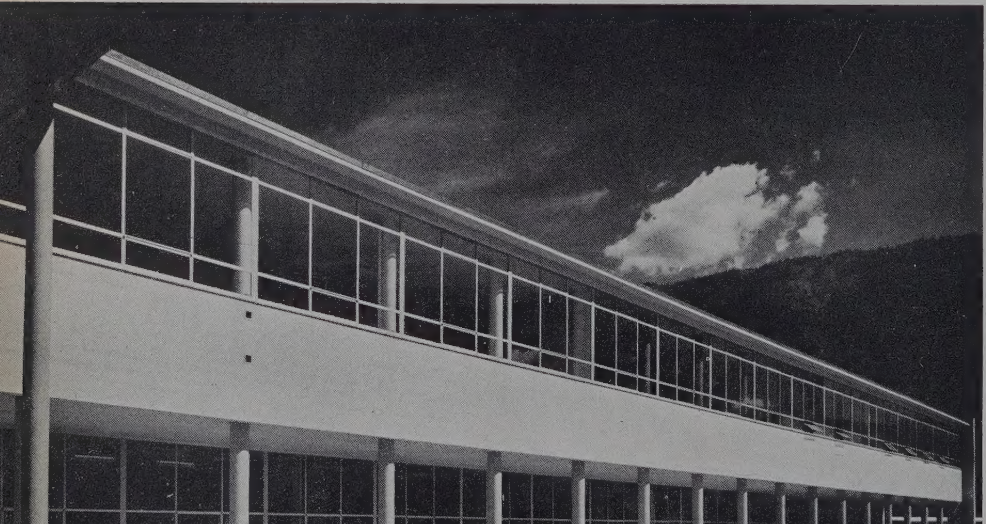
The design of schools is not a field for architectural revolution and individual expression. It is a social responsibility requiring that the architect gives of his best as a contribution to one of Democracy's greatest responsibilities: education and understanding. The child in search of learning is the client, the architect is just another teacher, and Canadian teachers have a reputation for devotion and fine quality.



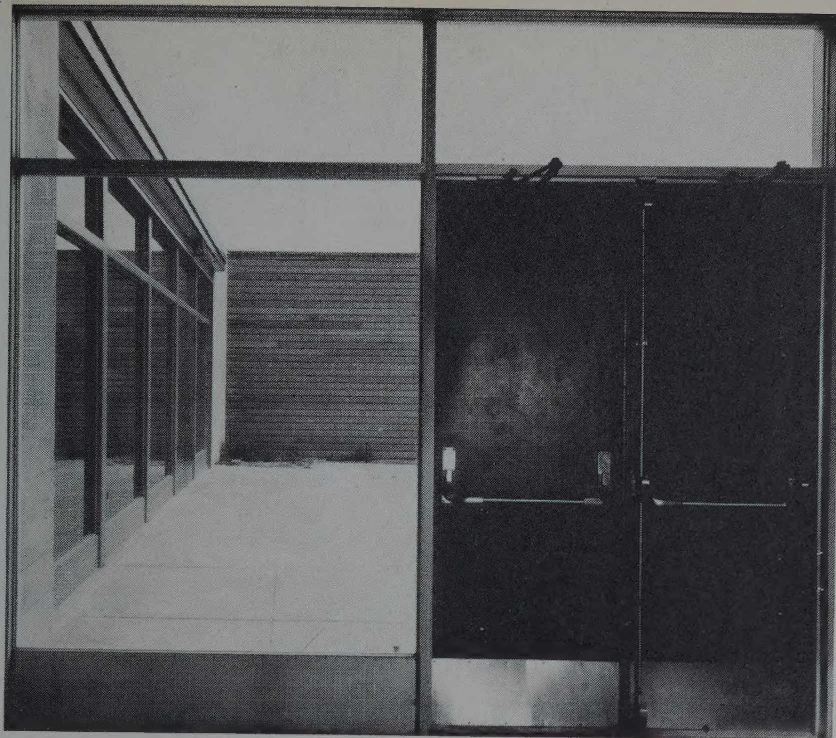
STANLEY HUMPHRIES JUNIOR SENIOR HIGH SCHOOL, CASTLEGAR, B.C.

SHARP & THOMPSON, BERWICK, PRATT, ARCHITECTS

A. E. Simpson, Mechanical Engineer
V. Thorson, Structural Engineer

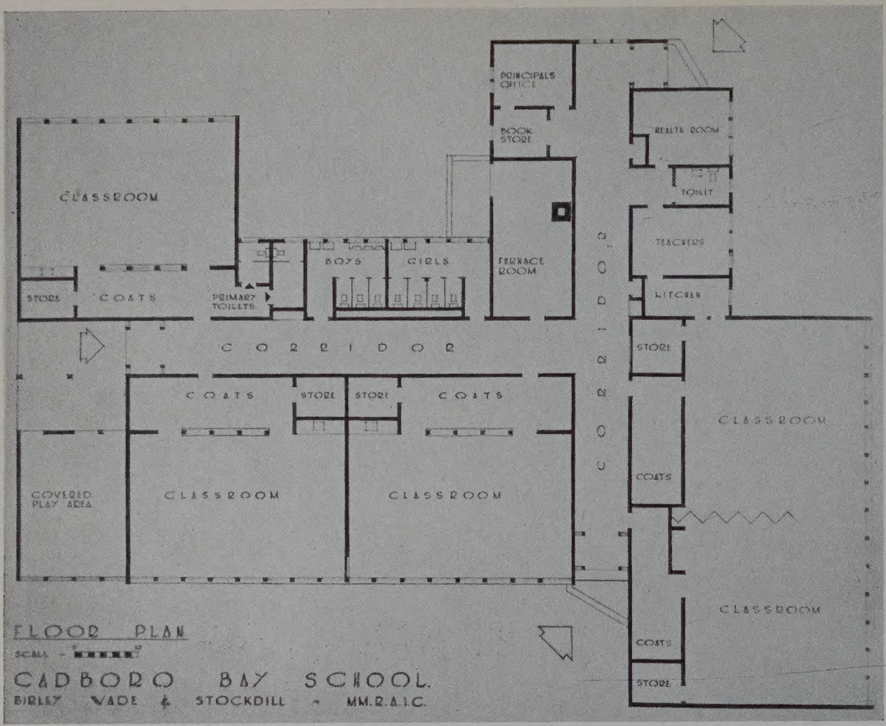


CLASSROOM BLOCK



SIDE ENTRANCE DETAIL
FROM CORRIDOR

GYMNASIUM

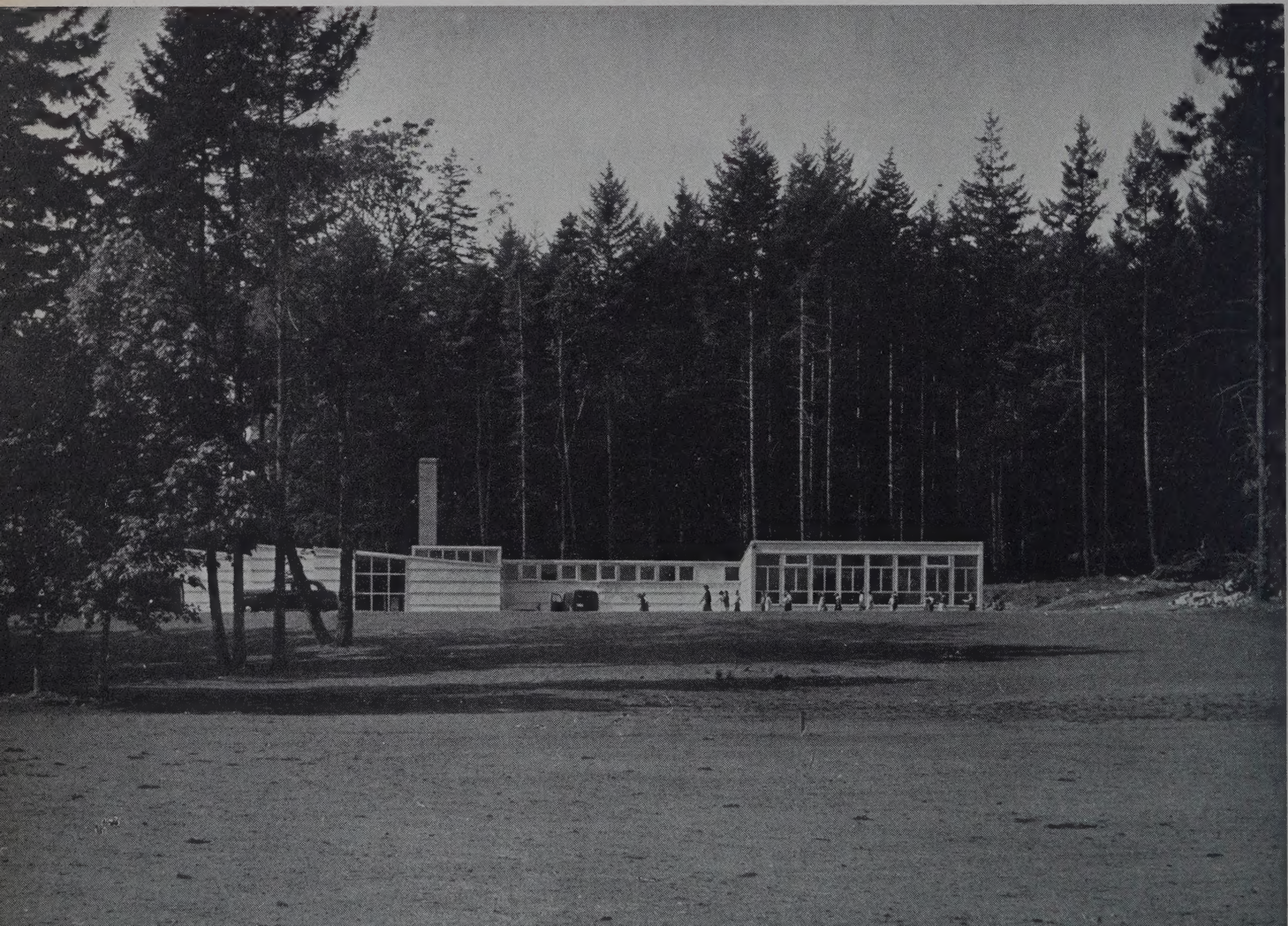


CADBORO BAY SCHOOL, B.C.

BIRLEY, WADE & STOCKDILL, ARCHITECTS

Luney & Robinson, General Contractors

JOHN WADE

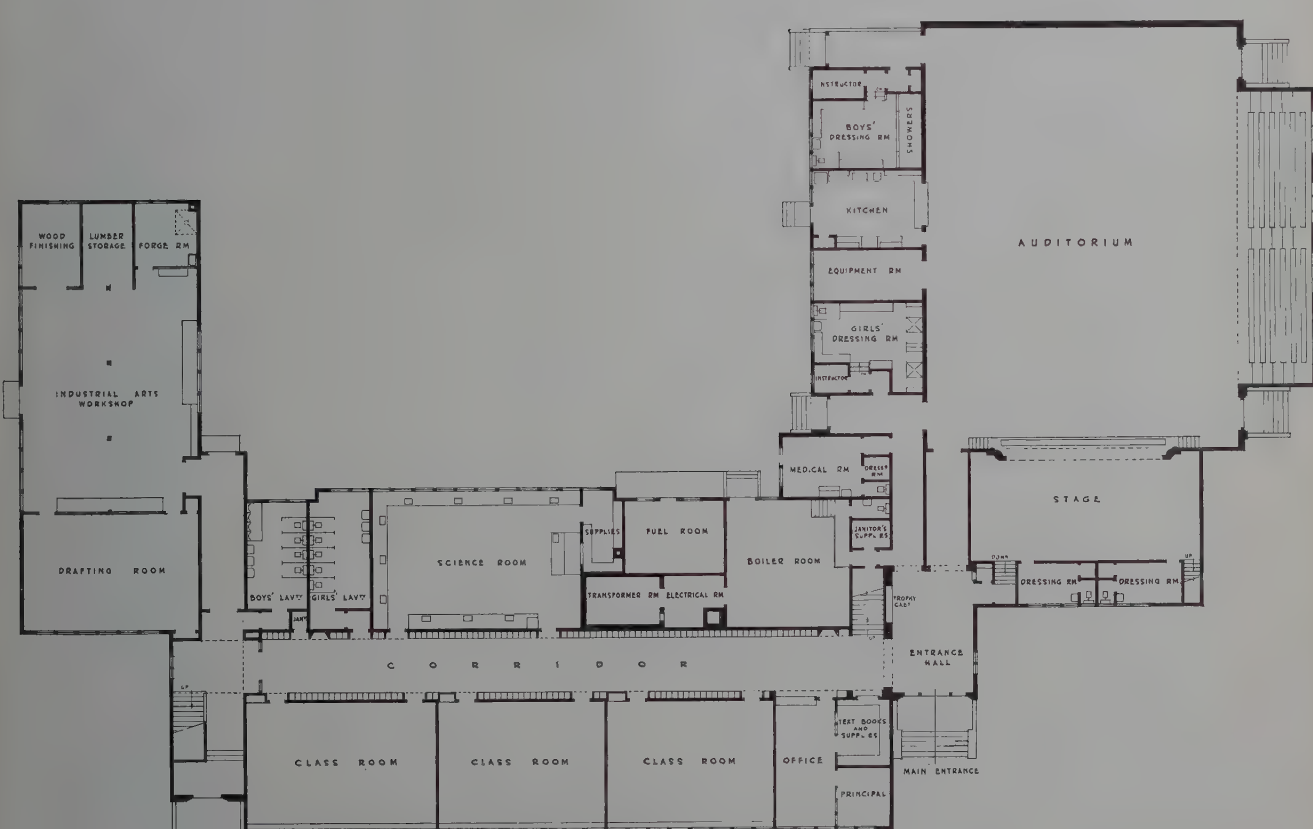


GORDON BALLENTINE

HIGH SCHOOL, GIBSONS, B.C.

HAROLD CULLERNE, ARCHITECT

James Nichol, Consultant Engineer
Wilson Construction Co., Ltd., General Contractors



1st FLOOR

A. EDWARD SIMPSON

THE MODERN SCHOOL—ELECTRICALLY SPEAKING

THE ELECTRICAL SYSTEM in a building today is a far cry from what was considered adequate and modern a relatively few years ago. Many schools are still in existence using bare, unshaded drop lamps in the classroom with none of the refinements which electricity can offer to both the pupil and staff. The writer has seen large schools in which the main electrical service switch would be hardly big enough for a medium sized modern house. The modern school today houses a network of wires which provide lighting, run signals, tell time, provide music and voice in classrooms and other areas, operate motors which drive fans, pumps, boilers, etc., and perform a multiple of duties which the average person does not even know exist.

Undoubtedly, electricity's most important single function in the modern school is to provide light. It is only comparatively recently that people have come to realize the number of human ailments which can be traced directly to improper classroom lighting during the period of a child's life when bones are soft and the child is forming living habits of posture, seeing, etc., which may remain with him the rest of his days.

About four years ago, the State of Texas conducted an exhaustive study on lighting and its affect on the child. This work was under the direction of Dr. Darel Boyd Harmon. A number of schools in separated communities were relighted according to modern standards. This relighting program employed both electric and natural lighting. Careful checks were made of the children entering Grade I. Their habits, posture, etc., were recorded and their progress through school was examined and recorded for a period of years. The progress of these test children was then compared to that of children in similar walks of life in schools which had not been relighted. It was found that, generally speaking, the children attending the properly lighted schools progressed better with their studies, had better general posture, and enjoyed better health. It was found that the children in the poorly lighted schools would twist their bodies into positions in order to see the work on their desks more readily. This might involve shielding the eyes with one hand while watching the blackboard, or squirming half-way round in the seat so that the shadow from the shoulder would not fall over a page. These tactics resulted in poor habits of sitting and standing. In many cases, curvatures were given to the spine which, by the age of 10 or 12 years, would be permanent. In contrast, it was found that the children attending the properly lighted schools sat better, stood straighter, and had a more relaxed approach to their work. Naturally, the most obvious affect of good light should be a lessening in the number of children who had to wear glasses in order to correct eye trouble, and this was found to be exactly the case. The research proved conclusively that the expense involved in providing a good lighting installation was warranted by the benefits derived by the children.

When thinking of lighting, it is perhaps usual to think of artificial lighting. Possibilities for the more efficient use of daylight, however, are being steadily realized and tremendous advances have been made in this field. In the field of lighting, the architect and the engineer should work together, each making his own contribution complementary to the other. For the purposes of this discussion, artificial light will be discussed, but it is not intended to detract from the importance of natural lighting.

It must be realized that in any system of lighting, at least 50% of the illumination reaching the working surface is reflected first from some other surface. With this in mind, it is easy to realize that the best artificial lighting system, consisting of fixtures, lamps, etc., properly spaced, can be rendered ineffectual by the improper finish of the room interior and furniture. For a pleasing lighting job, interiors should be light coloured. Ceilings should be white or off white; upper walls should be light coloured, though they need not be as light as the ceiling; lower walls should be progressively darker than the upper walls; and the floors should have a light covering rather than the traditional almost black oil floors of the older schools. Apart from custom, there is no earthly reason why desk tops should not be bleached rather than stained as is normally found. A generally accepted rule is that in a properly designed lighting installation, no two adjacent surfaces in any line of sight should have a brightness ratio of greater than 3:1, and there should not be a brightness ratio greater than 10:1 between the darkest and lightest parts of the room. This is an ideal condition almost impossible to achieve, but it can be approximated by the proper selection of interior finished and light sources. If this ideal condition is achieved, then the lighting fixtures appear to blend entirely into the ceiling; the ceiling, in turn, blends into the walls; and the walls into the desk tops. There are no areas of extreme shadow or extreme light, and the whole installation is ideally condusive to relaxed seeing.

Two problems present themselves to the illumination

engineer. First, a system of lighting must be provided which will provide adequate light on the working plane. It has been found that in the lower intensities, such as from 5 to 10 foot candles, visual acuity is doubled if the light intensity is doubled. As the light intensity is increased, the increase in visual acuity falls off until at about 25 foot candles, visual acuity for normal purposes such as reading or writing, is practically at a maximum. Doubling the lighting intensity, say to 50 foot candles, brings about a relatively small increase in the time taken for the eye to "see" an object and register this object on the brain. This does not apply to cases of impaired vision where intensities even exceeding 50 foot candles may be required for proper seeing. It also does not apply for prolonged seeing at difficult tasks such as watchmaking, drafting, or other fine industrial and commercial applications. An intensity of 25-30 foot candles is generally considered to be quite satisfactory for the average classroom.

The second problem is the quality of illumination. By quality is meant, absence of glare, shadows, etc. For example, it would be possible to provide an average intensity of 25 foot candles by suspending a sufficient number of 1000 watt bare bulbs from the ceiling. This would obviously provide a quality of illumination which would drive the average person blind in a very short time. In order to provide the necessary absence of glare, lamps (whether fluorescent or incandescent) should be shielded. This may be done by the selection of a proper lighting fixture, or by architectural features built into the ceiling of the classroom. The correct colours for interior finish play a tremendous part in providing the proper quality of light.

An eternal question in the matter of school lighting is whether or not fluorescent lighting is superior to incandescent lighting. In the opinion of the writer, an equally satisfactory installation can be made using either system. The fluorescent lighting system will cost slightly more in the initial installation, but the operating costs will be considerably less. The maintenance of the fluorescent system will probably be higher, but this must again be offset by the reduced operating costs. The matter of which system is superior is basically an economic one. In the case of primary schools where the lights will probably not be used to any great extent due to the fact that the schools dismiss early, incandescent lighting is probably preferable. On the other hand, in a high school where the lights are used more and night schools may be in progress at certain periods of the year, the fluorescent lighting would probably be the one to choose. Besides hours of burning, prevailing power rates in that particular district have a tremendous bearing on the choice of systems. When figuring the probable number of hours that the lights will be used during the average school day, consideration should be given to the area in which the school is located. Schools generally subject to cloudy weather during the winter, or to a smoky atmosphere, will normally use the lights for a longer period of time than schools in the country where sunshine and reflection off snow is more the rule than the exception.

On the other hand, it is quite prevalent amongst teachers to turn lights on in the morning and leave them on the remainder of the school day, regardless of whether they are required or not. On innumerable occasions, the writer has gone into school rooms which were so brilliantly illuminated by daylight that it was almost impossible to tell whether the artificial lights were on or off. In many cases they were on and had probably been on for several hours, since perhaps about 9.30 in the morning before the clouds had parted sufficiently to provide adequate natural illumination. At one major high school which had been in operation about 6 months, the writer was asked to make a check as to why power bills should be so high and lamp life so short. The principal had computed what the bill and lamp life should be, based on what he felt was an average number of hours burning for the school. Arriving at the school one night unannounced, the writer found every light in the building on. It was the custom of the janitors to start at one end and as they swept the rooms, would turn lights on, leaving them on for the next crew who came through cleaning out waste baskets. They, in turn, would leave them on for the janitors making another set of rounds later on in the evening. When this condition was pointed out to the principal, some corrective action was taken and lamp life went up while power cost went down.

Lights, of course, are installed in every part of the school and not merely in the classroom. Generally speaking, the lighting in other than classrooms is not of such a critical nature. It is now generally the custom to install students' lockers in the corridors and for this reason, good corridor lighting should be provided. Lighting in the offices should be comparable with any modern office lighting system.

In the gymnasium, the lighting system must provide adequate light for basketball, badminton, callisthenics, etc. A level of 20-25 foot candles should be produced on the playing floor if it is proposed not to have major league games in the gym. If it is a high school, and major league games will be played, then a minimum of 30-40 foot candles should be installed over the playing floor. If a ceiling is provided in the gymnasium, then the lights should preferably be mounted flush. This not merely makes an excellent appearance, but also places the lights out of harm's way and reduces the likelihood of breakage by basketballs, volleyballs, etc. If an open truss ceiling is used, then the lights should be suspended between the trusses with the bottom of the lights level with the bottom of the trusses. Incandescent lighting is practically universal in auditoriums. Regardless of the type of fixture employed, it must have some sort of protection under the bottom of the fixture so that basketballs, etc., cannot strike the lamp and bring a shower of glass down onto those on the floor. The entire fixture must be of very rugged construction in order to avoid possible breakage.

While, as mentioned before, lighting provides the biggest single electrical contribution to a school, the other uses for electricity must not be overlooked.

The trend in modern design seems to be toward a rambling construction rather than multi-storey. Architecturally speaking, this provides many advantages, but it also provides some prodigious distances between many departments. With this in mind, an inter-communication

telephone system, at least from the principal's office to each outlying department, such as Home Economics, shops, gymnasium, auditorium, etc., is most desirable. Such a system can be very simple. If funds permit, an inter-communicating telephone may be installed in each classroom connecting with the principal's office or the general office. In schools which have such a system already installed, it is generally conceded that it is indispensable and the principal and teachers wonder how they ever got along before it was installed.

Clocks and time signals are indispensable in every modern school. These can be treated together since the same basic element controls both functions. Preferably, a system should be installed which embodies a master device for the control, setting, and synchronizing of all clocks in the building. This same control will sound signal bells at predetermined intervals. Facilities are provided so that the time intervals sounded on the bells may be readily changed in the field as requirements vary. Clocks are normally located at strategic points in corridors, laboratories, Home Economics dept., shops, general office, auditorium, and gymnasium, and at any other points which the budget may permit.

Program bells must be located so that they are thoroughly audible throughout the whole school. This will include such out-of-the-way places as boys' and girls' changing rooms off the gymnasium, shower rooms, etc. It is better to install a greater number of relatively small bells rather than a few large bells. The larger bells may get the coverage required, but will be objectionably loud to those close at hand. In most cases, bells or horns are also required outside the school for signalling the playgrounds. These outside bells will operate on a different program to the ones inside and the central program controller must provide this facility.

A fire alarm system is mandatory and must conform to the rules and regulations set up by the local fire marshal. Local rules vary widely, but one general rule is that it must provide adequate coverage and must be absolutely reliable in operation. Care must be taken to see that the fire signal will not be confused with the program signals.

Public address sound systems, once considered a luxury, are now recognized as being an integral part of the educational curriculum. Public address sound systems fall naturally into two classes. First, there is a fixed console generally located in the general office, or in some small room provided for the sound equipment. This provides facilities for playing records, receiving radio broadcasts, or using a microphone. Any of these three activities originating at the central console can, by a series of selective switches, be transmitted to any or all classrooms, shops, laboratories, etc. A central sound system may have one or more channels. In the case of a single channel system, it is only possible to transmit one program to one or more classrooms. This may be either radio, records, or a speaker using the microphone. In the case of a two-channel system, two programs may be sent out to two selected groups of classrooms simultaneously.

Second, there is a mobile unit or channel. This should consist of a high fidelity amplifier, record player, and particularly good quality loud speaker. The entire equipment can be readily mounted on a wheeled dolly for easy transporting from room to room. Radio facilities are not generally provided in this mobile unit, and it is used exclusively for the playing of records and the use of a microphone. It finds its use in individual classrooms for music appreciation groups. It can also be used in the auditorium or gymnasium. Facilities are provided for the plugging in of one or more microphones at the amplifier. The unit itself is generally kept off stage, while the microphones with trailing cables are used on stage or on the gym floor. If this equipment is provided, then facilities should also be provided so that programs originating at the mobile unit in the auditorium can be transmitted back to the fixed unit in the general office and thence to the various classrooms. The facilities which can be provided by a P.A. System are so numerous, that a careful study should be made of the requirements for each particular school before definitely deciding on what equipment should be supplied.

The design and construction of schools suffered a severe set-back due to the lack of public funds during the depression period and the lack of materials during the wartime period. Since 1946, population demands and the increase in public interest brought about a most phenomenal Canadian school building program. To carry out this program, architects and engineers working together have taken advantage of the many new materials and construction methods now available. These features, combined with the contemporary psychological and functional approach, have developed a public school which ranks among the finest in public buildings.

REPORT ON SCHOOL CONSTRUCTION IN BRITISH COLUMBIA

The Royal Architectural Institute of Canada Convention will take place from April 29 to May 2 at the Hotel Vancouver, Vancouver, B.C., and to many architects visiting British Columbia for the first time, it is considered that the problems and developments in School construction throughout the Province would be of interest at this time.

The area of British Columbia is 383,000 square miles, compared to Ontario which is 407,262 square miles in area. Only about one-tenth of British Columbia is of such character that towns, or cities, can develop, and as its economy is mainly based on fishing, lumber, mines and water power, schools must be constructed in many cases hundreds of miles from the established population centres. This makes construction difficult, and almost prohibits the use of certain established materials.

The general map of British Columbia accompanying this article shows the locations where major school construction has been completed since 1947. Some of the isolated positions shown on this map present a major problem for the architect. One firm of architects, two years ago, was given the problem of designing a four-room school at Lower Post, just below the Yukon Boundary. The only access to Lower Post was through the port of Skagway, Alaska. The severity of the climate allowed only two months of building weather. All materials had to be estimated, purchased and shipped by the architect, and loaded on one scow to Skagway, complete with all trade materials. Reports show that the building was completed on schedule.

The above example emphasizes the fact that a unique design problem exists, in that schools must be designed with easily transported materials, and in such a manner that expansion is properly provided for. It is necessary that design be of such a type that the local carpenters can construct the buildings with whatever labour they can find.

In 1951 fifty schools were built in the above manner, and the Department of Education officials are now of the opinion that in these locations in British Columbia the children are enjoying educational facilities at least comparable to the populated centres.

In the last ten years there has been a population increase of some 300,000 people.

In 1946, $1,200,000 was expended on new buildings and reconstruction throughout British Columbia.

In 1948 this increased to $10,000,000.

In 1951 one hundred schools were constructed at a total cost of $20,000,000, and present estimates show that 1952 will at least equal 1951.

The population increase shows 10,000 additional new pupils each year, which requires 250 new classrooms, in addition to maintenance and reconstruction, to bring the old schools up to the required standard.

Due to the accessibility of good lumber, most schools outside of the City of Vancouver are of frame construction. The argument for frame is that it facilitates simple alterations as educational requirements change, and versatility for expansion. Nevertheless, in the last two years there has been a noticeable move to permanent construction in the larger schools, particularly with permanent exterior construction and flexible interior partitions.

The climate of British Columbia also has a noticeable effect on the design of schools. In the lower mainland area surrounding Greater Vancouver, the climate is dull, with a heavy rainfall during the fall and winter seasons. Most school designs, therefore, incorporate the generous use of glass on the south, east or western exposure. To the east of Vancouver, from the Okanagan to the Alberta border, there is little rain, with a sun problem particularly in winter. It is therefore necessary to consider the design of classrooms in an alternative manner, and classrooms on the north exposure, in many cases, have been determined preferable.

The conditions of climate and location present design problems which will provide a definite opportunity to young architects of the future in British Columbia. As one authority stated, the only ideal school for some locations is one that can be placed on a truck and relocated each year as developments and location changes dictate.

R. A. D. Berwick

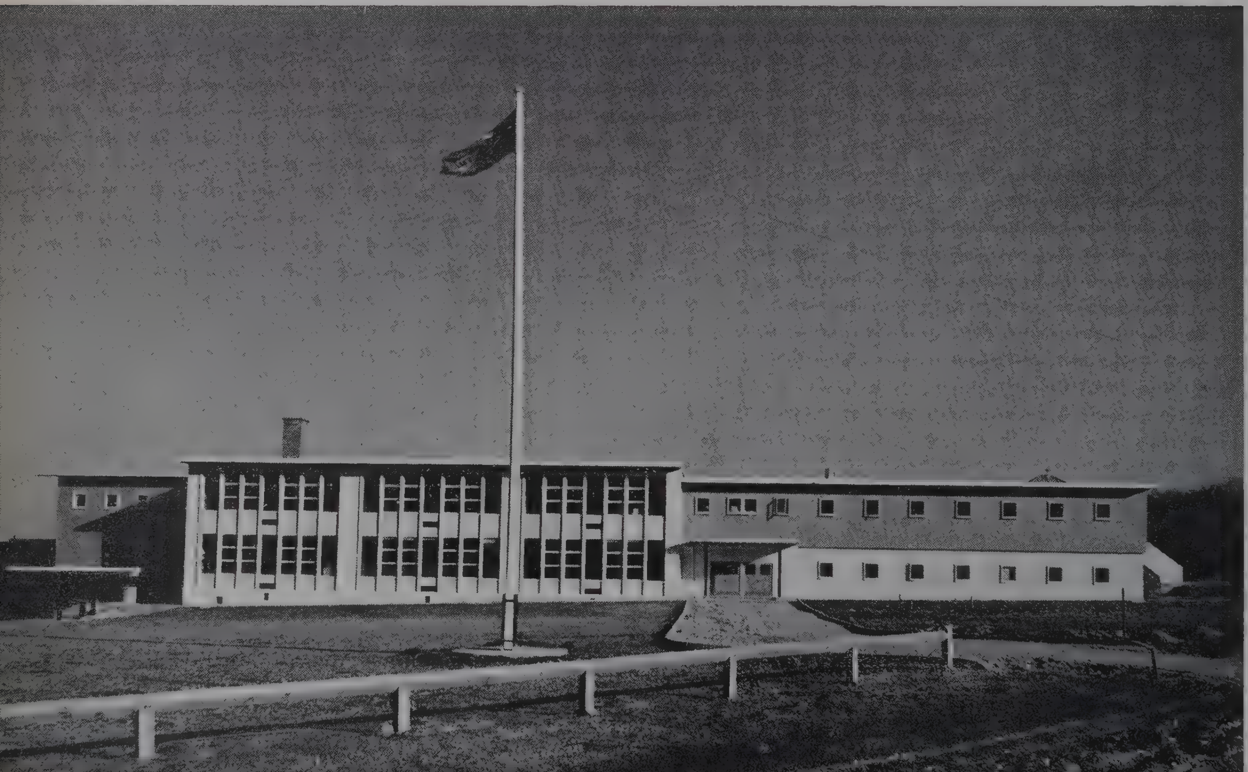
GRAHAM WARRINGTON

GYMNASIUM

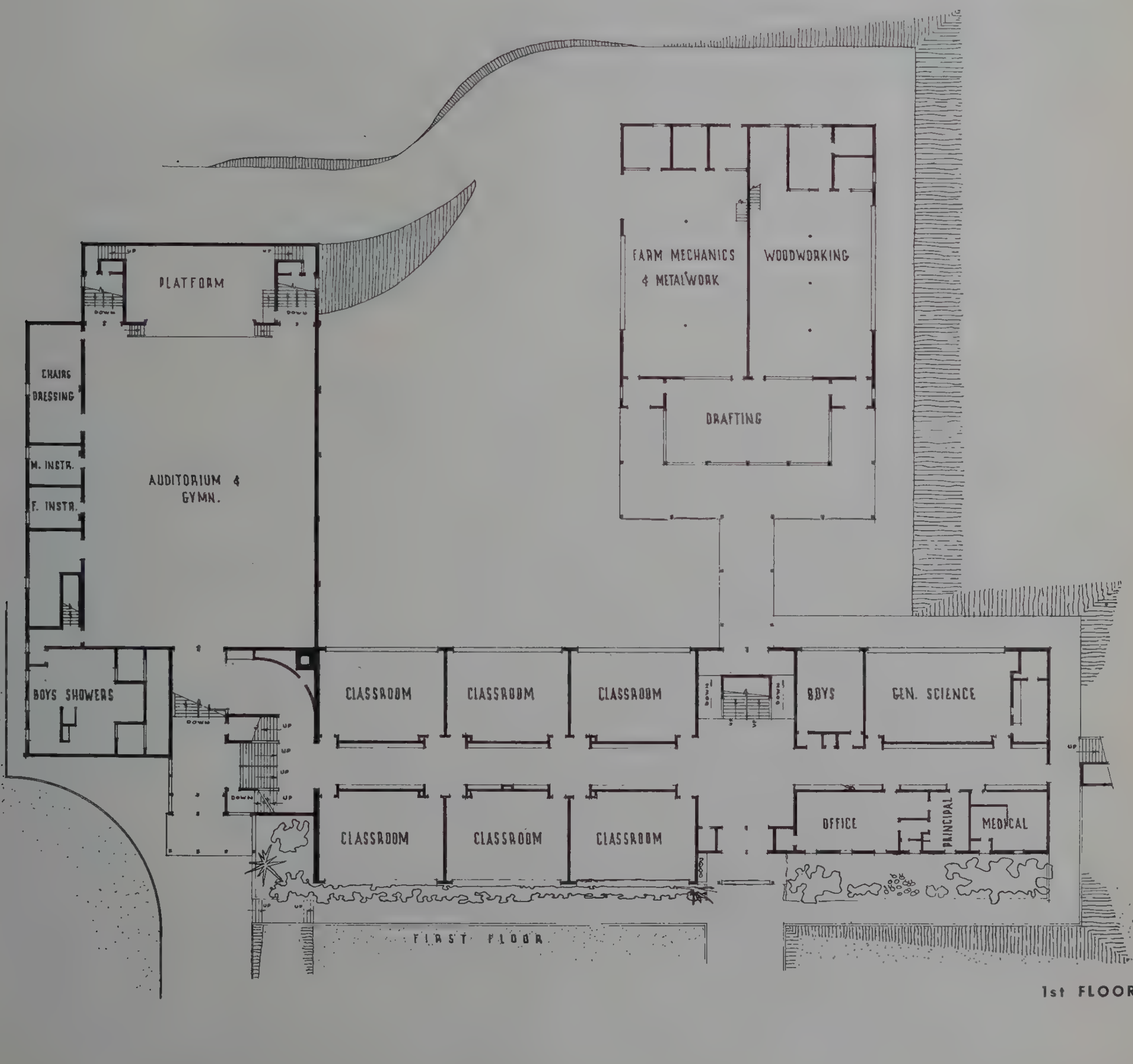
PRINCESS MARGARET HIGH SCHOOL, SURREY, B.C.

GARDINER & THORNTON, ARCHITECTS

Olund Brothers Limited, Contractors
David Hardy, Consultant Engineer



NORTH EAST ELEVATION



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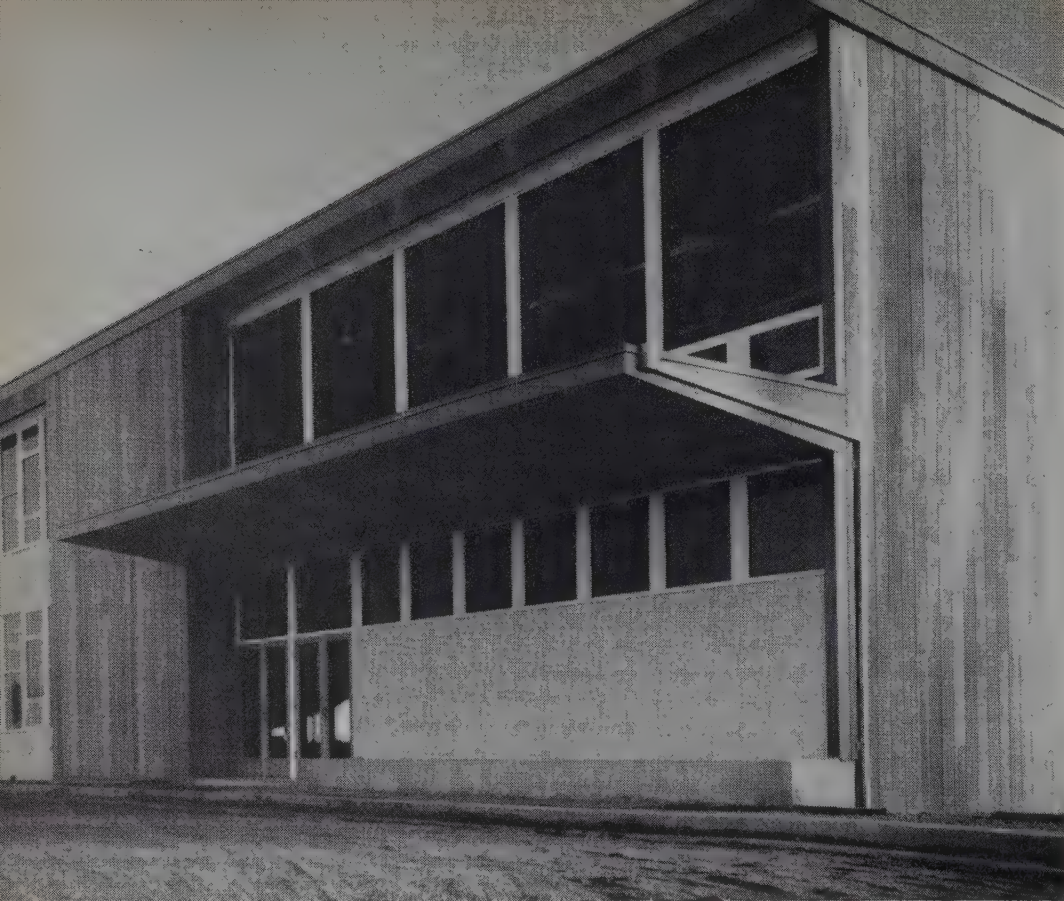


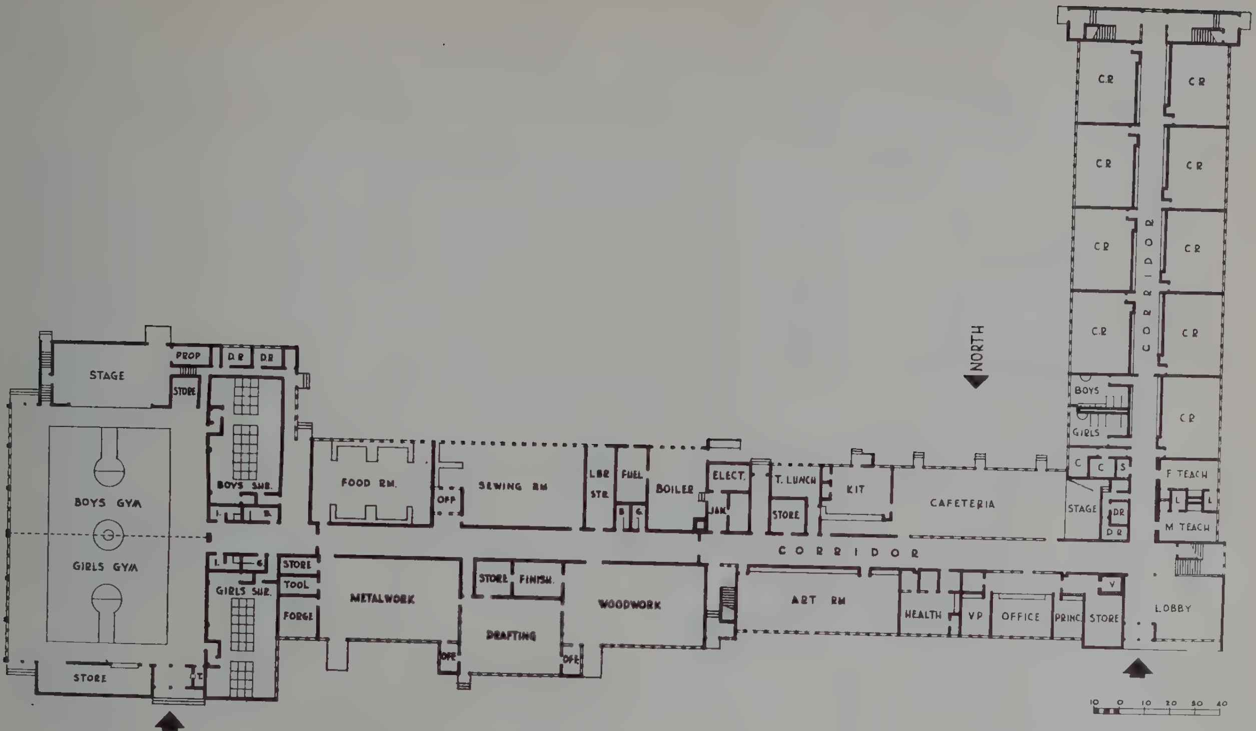
MAIN ENTRANCE

DUNCAN HIGH SCHOOL, VANCOUVER ISLAND, B.C.

HUBERT SAVAGE, ARCHITECT

Bennet & White Construction Co. Ltd., General Contractors

WOODWORK SHOP



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CLASSROOM WING

COMBINATION PARK AND COMMUNITY CENTRES

As ARCHITECTS we are prone to have the impression that the building which represents, in a Modern School, such an enormous planning problem costing large amounts of money is the only consideration and the layout and landscaping of the site is a problem that must await the completion of the building project. This often means that the opportunity for the best development of the site is irrevocably lost to the school and the community, and the community can make good use of the facilities that can be provided as the out-of-door part of a school programme.

Normally the architect is never the one to determine whether or not a school is needed in a given locality. Landscape architects could be of genuine assistance in the determination as also could we be in considering the adequacy of the land for the building — the size and shape of which we have soon got some idea. We can also assist in calling attention to certain rules regarding recommended acreage per hundred pupils that school boards are not always familiar with. Nevertheless, we are seldom called in until the matter is a "fait accompli" and nothing can be done about it.

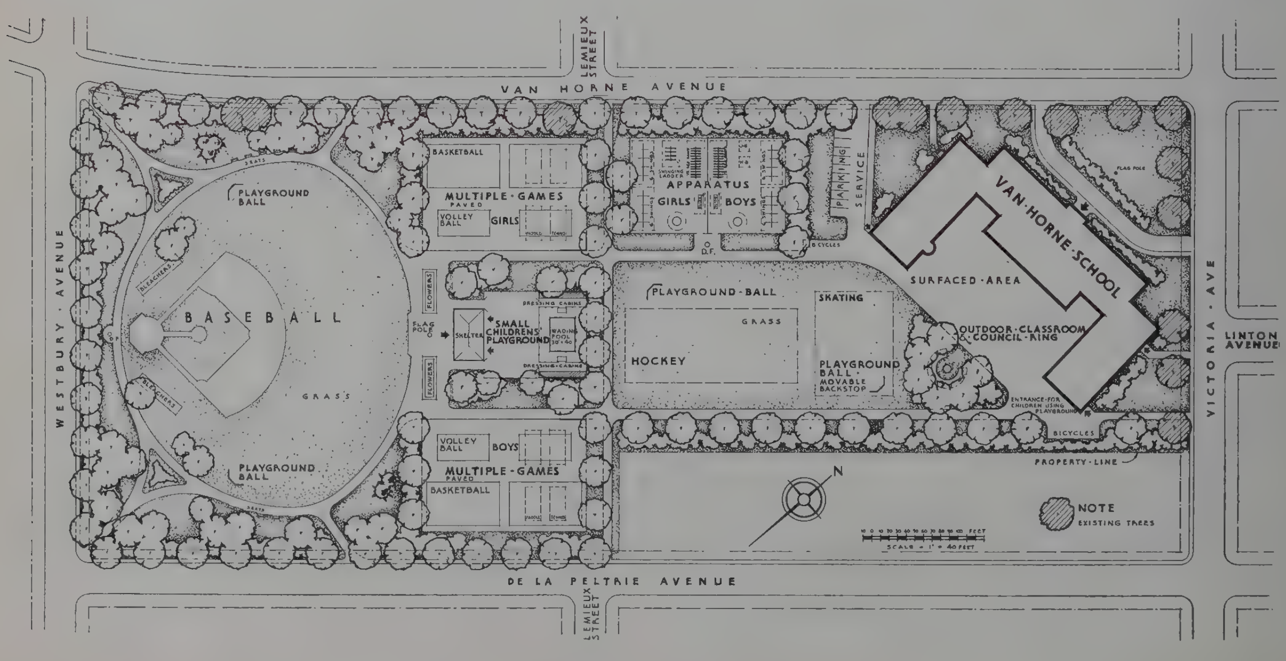
There are guides in this connection that have been accepted by school administrators. One of the most accepted follows the recommendation of the Connecticut State Department of Education, School Building Code, which was printed in this *Journal* some years ago in the form of a graph. This graph suggests areas that have been found adequate and is sufficiently important to justify reproducing again.

Years ago when children's legs and street cars were the only means of getting them to school, the selection of a school site was determined only by its accessibility and we all know handsome and costly schools that have no playground space at all. This can be very embarrassing as in Outremont we have the case of a high school where additions are essential to round out the curriculum but because these will fill up all available space the town council refused a permit (apparently because the surrounding proprietors were afraid that the children would clutter up the lawns and street). The matter has been submitted to the highest courts and it looks as though the school will be granted the necessary permit. But consider what expense and bad feeling could have been avoided had the school board fifty years ago acquired land — which was available — along the lines of the Connecticut recommendations.

This school has the usual athletic programme but it is necessary to transport the students a considerable distance to their playing. With the crowded present day schedules the time lost is serious to say nothing of the expense of transportation.

In Montreal we have two other high schools that were more fortunate — probably by accident! One is the Westmount Junior High School which faces the magnificent Westmount Park and the other the Le Plateau Academy in the centre of Parc Lafontaine. The former has facing it public park space that accommodates two skating rinks in the winter and in the summer softball diamonds, tennis courts and a football field. The area also has full park facilities all of which are used equally by the school children and the community. The Plateau Academy has greater park facilities but this school does not put the same emphasis on athletics as a part of the school training. After hours, however, the fourteen tennis courts, softball diamonds and hockey rinks are continuously used.

In the Town of Mount Royal a new high school has just been completed that has an equally good setting. In this case although the site is not as centrally located as the population density would indicate, the Board decided that the wonderful play and sport facilities provided by the city park made the land ideal. Certainly with modern



means of transportation it is possible to go farther afield and select a site that is adequate. In this case the grounds adjacent to the school comprise all the facilities already mentioned and a full size athletic field, running track and bleachers. In the case of the Plateau Academy and the Mount Royal High School the schools reciprocate for the use of civic recreation areas by providing the community with well-equipped concert halls and gymnasia for the use of badminton clubs and other outside organizations. The Halls are in frequent evening use for the presentation of plays and recitals by concert artists. The well-equipped libraries are also well used.

In the three cases described above, school boards have shown great wisdom by locating their buildings adjacent to large public parks. Wonderful facilities are thus available at no cost to the schools. There seems to be no conflict with the use of the parks by the public as this occurs after school hours.

One of the most beautifully located schools is the MacDonald High School at Ste Anne de Bellevue. Here is a school occupying land furnished free by MacDonald College which is a part of McGill University. The grounds of the college comprise of hundreds of acres and the part where the school and college buildings are located is beautifully landscaped. This landscape work was laid out at the same time that the buildings were planned so that an extraordinarily attractive combination of roads, foliage and buildings has resulted. There are adequate playing fields and all of these facilities are used by the community to the fullest extent as well as by the students.

In the new Montreal Protestant schools under construction or being planned, sites have been chosen that conform roughly with the recommendations of the chart already referred to. These sites as will be seen from the one illustrated give ample chance for development of playing facilities all of which are intended for community use. How free these facilities are made available often depends on the attitude of the public as unfortunately the damage to buildings has very often resulted in compelling the erection of security fences to permit of better control. In Montreal, however, an interesting arrangement has been made between the school authorities and the city. The latter supervise the playgrounds after schools hours and during the months that the schools are closed. In return the school makes available an office for a supervisor and the locker and shower areas. During the summer the city assumes all maintenance costs and erects what play facilities are necessary for small children. In the winter the city constructs the skating rinks and maintains them. Thus we have a case of school property being at the disposal of the community under the best of circumstances. The areas are suitably fenced to assist supervision.

In the smaller cities of Quebec the idea of large areas has taken root and we have high schools at Three Rivers, Asbestos-Danville, and Chambly where the sites comprise at least twelve acres. Here full playing facilities are contemplated or have been provided that will be shared by the public and the students alike. As the taxpayers are being called on more and more to provide money for schools and school grounds it is reasonable to soften the blow by making the facilities available for the community.

There is one locality where a wealthy landowner has presented the local school board with an estate consisting of a mansion and four hundred acres of land on which is a well constructed nine hole golf course and a small pond. This property is rolling and if a new school can be financed there will be a wonderful opportunity for a landscape architect to do something outstanding. As the golf course can be retained this will provide a community facility that will really be something. The graduates from this school will probably be heard from in future golf circles.

The writer is only familiar with the Protestant section of Quebec school buildings which are only a small proportion of our school buildings. Due, however, to a different conception of education the French speaking schools do not provide the same facilities for sports. This is considered generally as an activity to be followed as an extra curricular activity so that baseball diamonds, and football fields, etc., are not generally a part of the school terrain. In contrast with this is the idea now being worked out at the Westmount Junior High School where all gym periods, which are one hour – are carried out in the park. Even in the winter the skating rinks are used for hockey during the school hours and every pupil plays the game – there being ample time to change clothing.

Some of our private schools have attractive park settings. Bishops College School near Lennoxville is a good example. This school is adjacent to a college of the same name where the layout of the grounds and the landscaping are reminiscent of the old world charm of a school such as Harrow in England. Some of the French speaking private schools, often part of a religious order, are set in spacious park-like properties. Some of these institutions have tennis courts, hockey rinks and anyone who has visited the Province will remember the large wooden structures erected for outdoor handball. Such school properties are not available to the public to any degree so are, therefore, outside the scope of this discussion.

The community use of school buildings is a subject that has been adequately treated in other issues, but community use also extends to the grounds where they have been designed for more use than a promenade for baby carriages – one should see the McGill University campus on a warm spring day to know what I mean. There is one problem that is important and that is maintenance costs that are naturally higher if the public has the free use of the property. In the case of the building facilities this has been adequately taken care of by making a charge for the use of any room. In some cases this has resulted in being a substantial source of revenue for the school. Some such arrangement should be possible in making available the special playing facilities that are a part of a well-provided school site. This is an argument in favour of fencing as a means of simplifying supervision which otherwise might require a number of policemen in constant attendance.

In considering the overall picture it is apparent that all school administrators are conscious of the need of adequate sites for new school building, and this space is being developed in such a way that the community will have full use of the grounds. There are more and more examples of the architect being consulted to ascertain that the ground will permit of the various playing fields required, and fortunate is the community where co-operation can be secured from the civic authorities that will match the wonderful work being done by the city of Montreal.

HAYWARD STUDIOS

SUMMERLEA ELEMENTARY SCHOOL, LACHINE, QUEBEC

J. C. MEADOWCROFT, ARCHITECT

J. L. de Stein, Structural Engineer
T. G. Anglin Engineering Co., Ltd., Mechanical & Electrical Engineers
A. F. Byers Construction Co., Ltd., General Contractors

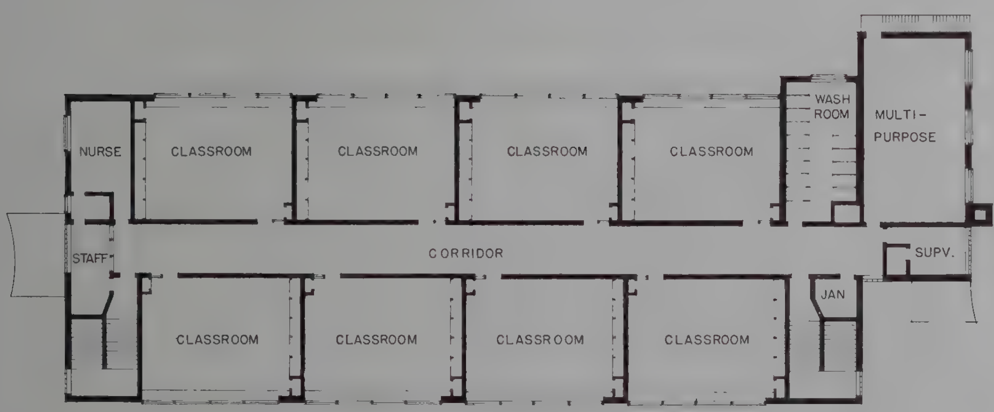
AUDITORIUM AND GYMNASIUM

TYPICAL CLASS ROOM

ECOLE MARION, ST. BONIFACE, MANITOBA

SMITH, MUNN, CARTER, KATELNIKOFF, ARCHITECTS

G. A. Baert, General Contractor



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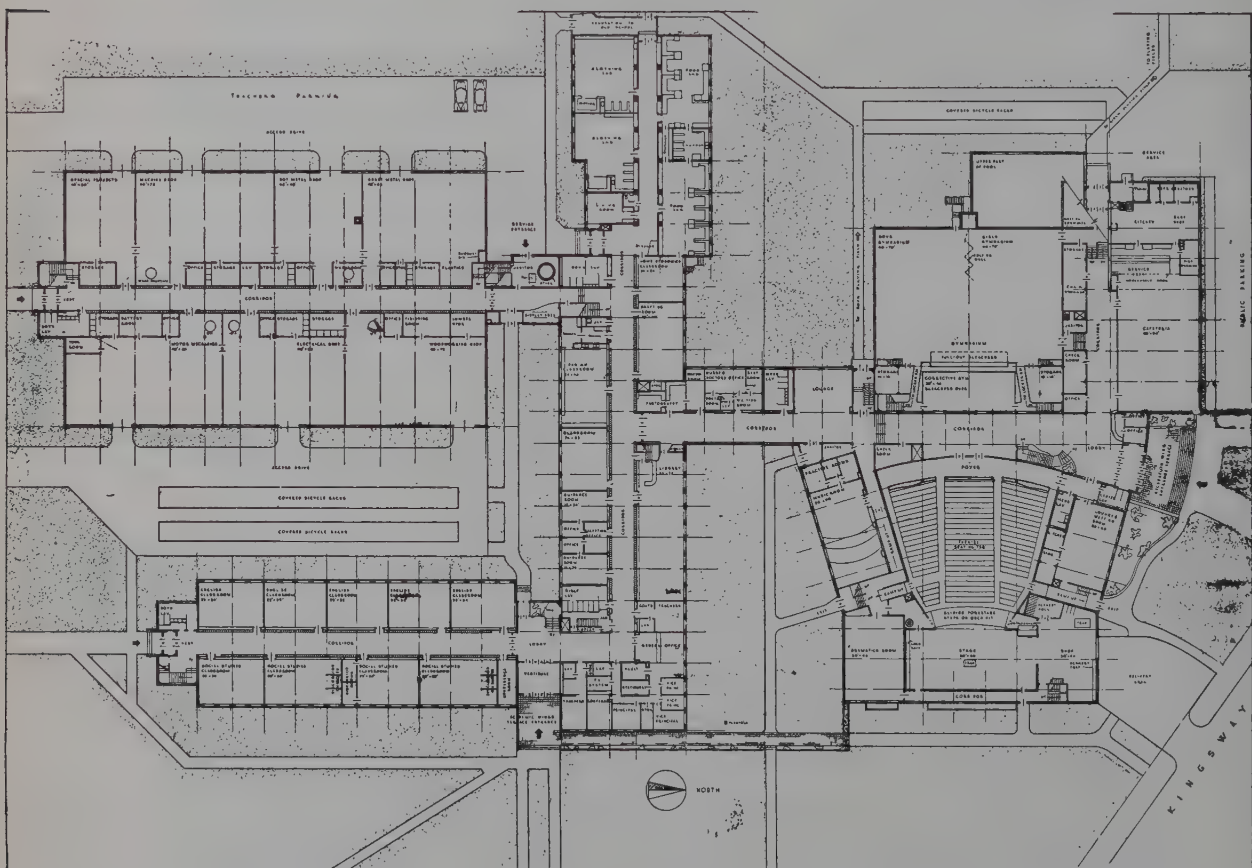
2nd FLOOR

VICTORIA COMPOSITE HIGH SCHOOL, EDMONTON, ALBERTA

DEWAR, STEVENSON & STANLEY, ARCHITECTS

Christenson & Macdonald Ltd., General Contractors



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DRESSING ROOMS

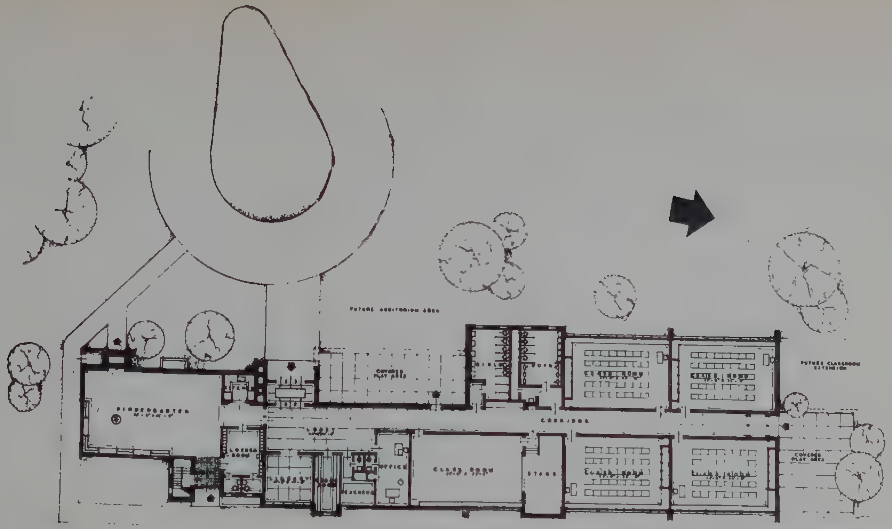
AUDITORIUM

BACK STAGE

BENNINGTON HEIGHTS ELEMENTARY SCHOOL, EAST YORK, ONTARIO

PARROTT, TAMBLING & WITMER, ARCHITECTS

Wallace, Carruthers & Associates Limited, Structural Engineers
W. T. Brickenden & Associates and Successors, M. A. McKay & Associates, Mechanical Engineers
Malvern Construction Co. Limited, General Contractors



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KINDERGARTEN

ENTRANCE LOBBY

THE HEATING AND VENTILATION OF SCHOOL BUILDINGS

HEAT IS LOST from the walls, windows and floor or ceiling of a space through the combined effects of radiation, convection and conduction. Similarly, heat is lost from the human body to the space through the combined effects of radiation, convection and conduction; and, in addition, evaporation. For the human body to be comfortable, heat must be lost to the surroundings at some fixed rate; this rate being dependent upon the age of the individual and upon his degree of activity. A sedentary person will lose heat at a lesser rate than the same person when engaged in physical exertion. Thus, for the same degree of comfort, a gymnasium in which students are engaged in sport would be maintained at a lower temperature than a classroom in which the students are relatively inactive. A very sensitive temperature regulatory mechanism within the human body permits some degree of adjustment of the rate of heat loss from the body, but when forced to the extremes of its range of adjustment, severe discomfort is experienced. For example, shivering in a too-cold environment and perspiring in a too-warm environment. Between these extremes, the heat regulation is by means of causing lesser or greater amounts of blood to pass through the capillaries of the skin.

A basic knowledge of the foregoing fundamentals is extremely helpful in the design of any heating and ventilation system, and is absolutely essential if one is to predict the quality of heating to be attained by any method of heating. The ultimate in quality of heating is achieved when no discomfort is felt at any location in the heated space. This ultimate is rarely achieved. Even though the air temperature in a room be maintained constant at a comfortable level throughout the space, those persons seated close to cold surfaces will lose heat faster, due to radiation, than those who are seated at some distance from cold surfaces. The same is true in respect of hot surfaces. In homes, the effect of radiation to cold glass surfaces is partially overcome by the imposition of drapes between the occupants and the glass surfaces. In schoolrooms, however, this is impracticable. In homes, the occupants will pull their chairs further away from cold surfaces when the effects of radiation cause discomfort. In schools this is also impracticable. Hence, the classroom presents a heating problem which calls for engineering skill and experience to achieve the ultimate in quality of heating.

The modern classroom is characterized by large areas of glass which often extend the full length of the room. The best heating and ventilation design will be one which will permit the students seated in the window row to experience the same degree of comfort as those seated in the corridor row. This ultimate cannot be achieved by the placing of radiators or convectors at two or three locations along the window wall because those students in the window row, who are opposite to the convectors or radiators, will lose heat slower than those in the window row who are not opposite the radiators. Furthermore, although cold drafts from the windows above the radiators are prevented by the upward current of warm air, in between the radiators there is no such upward current and cold air will spill down onto the floor causing uncomfortable drafts.

Thus, since each lineal foot of window wall is, for all intents, the same as any other lineal foot of window wall, it appears best that the required heating elements be spread uniformly along the entire length of the window wall. Besides eliminating the alternating warm and cold spots obtained with high-heat output heating elements, there is a further advantage in that less stratification will occur of warm air to the ceiling and cold air to the floor. Hence, the heating engineer should select his heat-emitting elements so that the sufficient amount of heating surface is uniformly distributed along the entire outside wall. This may be partially accomplished by the selection of long, low, thin convectors or radiators so that most of the window wall is covered. However, it is sometimes difficult to select these units with a sufficiently low heat output per foot of length when steam or hot water at the usual temperatures is employed. On the other hand, many manufacturers are now supplying a finned pipe which has proved to be eminently satisfactory for classroom heating. This pipe may be constructed of copper or steel with aluminum, copper, or steel fins. The pipe is furnished from 1″ to 2″ pipe size and the fins are in the neighborhood of 4″ square and spaced at approximately ¼″ centres along the pipe. The finned pipe may be installed along the window wall in a simple square-mesh punched steel enclosure, in a continuous metal cabinet, or in a flue space provided between the back of continuous bookshelves and the wall. The punched metal enclosure is the cheapest but is rather unsightly and is not recommended for this reason. Many manufacturers are supplying a continuous metal cabinet which overcomes the objection of unsightliness. Many architects in British Columbia are utilizing the back of continuous bookshelves. The toe-space is left open so that air may be drawn from the floor into the flue space and a grille is fitted to the top of the flue space, flush with the top of the bookshelves. Access panels, usually hinged, are provided to permit the servicing of valves and steam traps and to allow for the cleaning of the finned pipe.

Finned pipe, as described above, has been successfully used with both hot water and steam as the heating medium. Where a thermostatically-controlled valve is used to admit the heating medium into the heating element, hot water provides a better quality of heating because the heat output from the finned pipe remains fairly uniform along the entire length of the pipe, even when the control valve is partially closed. Where steam is used as the heating medium, there is a tendency to obtain high

heat outputs adjacent to the control valve and low heat outputs towards the trap end when the valve is partially closed. This could be offset by the introduction of a steam-distributor tube inside the finned pipe, but experience has indicated that the added expense is not warranted. During the periods of cold weather, when quality of heating is most important, the control valve is in a position of being nearly wide open and almost the entire length of finned pipe is full of steam. Under these conditions, the heat output from the finned pipe is nearly uniform per foot of length. Where thermostatic control of individual classrooms is employed, finned pipe has a further advantage in that only one control valve is required per room. Further economies are afforded because only one pair of connections to the mains are required and, where steam is used as the heating medium, only one steam trap is usually required. Where the heat loss from the room is so great as to necessitate more than one tier of finned pipe, then one steam trap will be required for each tier.

Generally, the quality of heating obtained in classrooms when forced warm air is employed is inferior to that obtained by the use of radiators, convectors, or finned pipe. This is due to the fact that it is difficult to blanket the windows with warm air. However, where bookshelves along the window wall have been allowed for in the architectural design, high-quality warm-air heating systems have been provided by introducing warm air at several points along the bottom of a flue space left behind the back of the bookshelves and the wall. A continuous grille should be installed at the top of this flue space. The grille should not have too great a free area so that sufficient resistance to air flow is imposed to cause the air to be uniformly distributed along the grille. Such a warm air system as described simulates the finned pipe system. In such a system, air is returned to the furnace through the corridors. Door grilles of ample size must be installed in the classroom doors to permit the passage of the return air from the classrooms into the corridor. Many warm air systems of this nature have been successfully employed in schools of British Columbia having up to four classrooms. Beyond four classrooms, it is wise to utilize steam or hot water heat.

Where it is impossible to deliver warm air through a flue space under the windows, the air is usually discharged through high side-wall grilles located in the corridor walls. The air from such grilles must be discharged with sufficient velocity to reach the window wall, but must not be of so high a velocity that it wipes the cold glass surfaces and continues down to cause a draft at the feet of the students. Grilles located at the baseboard level are impracticable because high velocities could not be employed without causing discomfort to the students along the corridor wall. Furthermore, ductwork can generally be run in the ceiling space of the corridor where it is convenient to run branch ducts to the high side-wall grilles. In this type of system, it is essential to provide ample cold air returns at the baseboard level of the window wall. Preferably, there should be a long, low return grille under each window. Even if all these precautionary measures are taken, it is difficult to obtain uniform comfort conditions throughout the classroom and generally, such systems are satisfactory only in comparatively mild climates such as found around Vancouver and Victoria.

The warm-air ductwork of all warm-air systems should be properly insulated, otherwise air delivered to rooms at the ends of the runs may be too cool. This is especially important in the modern design of one storey schools where the classrooms are designed side by side, all on the same exposure.

All forced warm air systems should be designed to permit the introduction of some fresh air into the system. In this respect, the warm air system has an economic advantage over other systems because the feature of ventilation is easily incorporated for little added cost.

Unit ventilators are utilized in many parts of the country for classroom heating and ventilation. In some respects, these systems are similar to forced warm air systems and in other respects, they are similar to convector or radiator systems. The chief advantage of the unit ventilator is that each classroom is provided with its own ventilation system which incorporates the required heating coils for heating purposes. Also, the design of a unit-ventilator system is simplified because bulky ductwork does not have to be run through the building to permit proper ventilation of the rooms. The unit ventilator is generally enclosed in a sheet metal cabinet which is placed along the window wall of the room. This cabinet encloses a fan or fans, motor, vee-belt drive, dampers, heating coils, filters and thermostatic controls. Variable amounts of fresh and recirculated air are drawn into the unit, filtered, heated, and delivered through a grille in the top of the cabinet into the room. Recirculated air is drawn through a grille in the side of the cabinet, near the floor, and fresh air is drawn through a louvered opening installed adjacent to the unit in the wall of the building. The disadvantages of the unit ventilator are that uniform comfort conditions do not prevail along the window row and the units are sometimes objectionably noisy. From a maintenance standpoint, one must consider that the motor and filters of each unit must receive regular attention. Unless a rigid maintenance schedule is enforced, it is possible that dissatisfaction will result.

The split system of heating and ventilation overcomes the objection of noise and multiplicity of motors and filters requiring maintenance. In such a system, the heat losses of the room are overcome by radiators, convectors, or finned pipe, and the ventilation air is supplied through grilles or diffusers from some central fan system. The air is usually delivered at or near 70 deg. F. but may be delivered at a much higher temperature in the early morning to permit quick temperature pick-up after a lowering of temperature in the school during the night. Likewise, during periods of high solar heat gain into classrooms, it is sometimes possible to deliver air at temperatures lower than 70 deg. F. When the ventilation system is expected to provide for cooling on account of solar heat gain, it is desirable to zone the system so that rooms on the sunny side may receive cool air while rooms on the shaded side receive air at or near 70 deg. F.

The split system requires a complete system of supply ductwork from the fan to all rooms to be ventilated. How-

ever, it is not necessary to have such a complete system of exhaust ductwork. In most cases, it has been found satisfactory to use corridors as exhaust or recirculation air ducts. From some point in the corridors the air is drawn into the exhaust duct and either entirely exhausted to the outdoors, or a portion is recirculated. Generally, in mild weather, all air is exhausted but as the weather becomes colder, it is economical to recirculate a portion of the air. To reduce heating costs, the portion of recirculated air should increase as the outdoor temperature becomes colder. This may be easily done by a simple design of automatic controls. Also, to reduce heating costs, all air should be recirculated during the morning temperature pick-up period. Where the corridors are used for the recirculation of air, it is necessary to install door grilles of adequate size to permit the passage of air from ventilated rooms to the corridors. It is usually found adequate to provide an exhaust system for only such rooms as chemical laboratories and lavatories. Door grilles should also be provided for these rooms to permit the entry of air from the corridors.

The ventilation of classrooms is sometimes provided for by the installation of an exhaust system only. Such a design presupposes that windows will be opened and fresh outdoor air will be swept across the room towards the exhaust grilles. Where such a design is used, added radiation must be installed to overcome the extra heating load imposed by the cold air. Also, window openings should be provided only adjacent to heating elements which are located so as to temper the incoming cold air. In such systems, it is probably also wise to provide draft deflectors at the bottom of window openings. Even though all these precautions are taken, there is still a strong possibility of experiencing cold drafts. Although this system is less expensive than the split system, it is definitely an inferior system. A still cheaper and less effective system is a similar one which utilizes natural draft air exhausters from each room instead of the central exhaust system. The air exhausters may be any of the patented designs usually constructed of sheet metal so as to take advantage of the action of the wind and are installed on the roof of the building.

Rooms in the Administration Area of schools, when heated with steam or hot water, are generally provided with convectors or radiators placed centrally below window openings. The expense of individual thermostatic control is usually not warranted and control of these heating appurtenances is by manually-operated valves or dampers. Mechanical ventilation of interior rooms should be provided but window openings should suffice for all exterior rooms.

It is recommended that the heating and ventilation of auditoriums and gymnasium-auditoriums be accomplished with a mechanical ventilation system. This system would comprise fan, filters, heating coils, automatically-controlled louver dampers, ductwork and diffusers. In this system, it is essential that a large portion of the air supplied be recirculated or exhausted from the floor level; otherwise the space may be slow to heat up. Where balconies or bleachers are provided, some air should also be exhausted from the ceiling of these areas. The central fan system should preferably be placed on solid foundations and in a space which is suitably acoustically insulated from the auditorium. Care should also be exercised in the selection of diffusers so that velocities through them will not exceed permissible limits of decibel ratings. It is also wise to line a portion of the supply ductwork with sound-absorbing material so as to diminish the transmission of fans noises along the ductwork. Also, the fan and motor should be mounted on resilient bases and the duct connections to the fan should be through flexible connections, such as heavy canvas.

Gymnasiums may be heated and ventilated in the manner described above for auditoriums, or a less expensive system of unit heaters may be used. Where unit heaters are used, it is seldom possible to obtain adequate ventilation. This is most important if large audiences are expected to use the gymnasium and, in such cases, the system described for auditoriums is recommended. Where unit heaters are used, the vertical-projection type is the most satisfactory since they may be mounted at a higher elevation than the horizontal-projection type. Unit heaters should be thermostatically controlled and provided with summer-winter switches so as to permit their operation for air-circulation purposes when heating is not required. Where the gymnasium is to accommodate audiences, unit heaters are unsatisfactory because of the noise they emit and because of the lack of proper ventilation.

The shower rooms, locker rooms, tote-basket rooms and lavatories of gymnasiums should be provided with plenty of mechanical exhaust ventilation. The amount of air to be exhausted in shower rooms must be large to handle the copious volumes of misty air generated there. Large volumes of air should also be taken from locker rooms and tote-basket rooms to diminish the smell of perspiration on clothes. Panel-heated floors in the shower rooms and dressing rooms have proved to be successful because the floor areas quickly dry off due to the heated floor.

Unit heaters are generally acceptable for the shop areas of schools but they should not be used in drafting rooms or other rooms in which a large amount of spoken instruction is given. Mechanical ventilation of these areas is usually not justified from an economic standpoint. However, unit heaters should be equipped with summer-winter switches to permit air circulation when heating is not required.

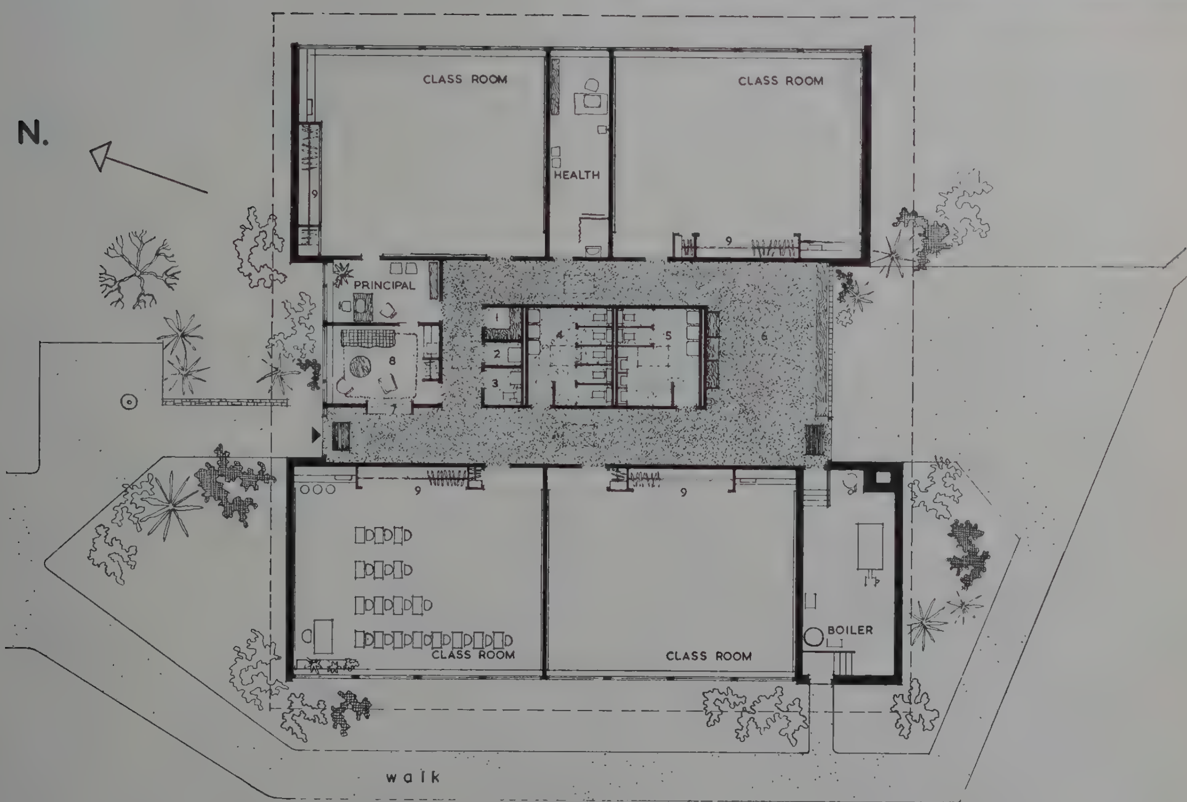
When the policy of the school administration is to heat the schools 24 hours a day during the periods of cold weather, then the calculation of heat losses and selection of heating elements is done in the usual manner. However, when the schools are allowed to cool down overnight or over week-ends, the size of heating elements must be supplemented to permit the speedy warming up of the cold building. The amount of supplementary heat required is difficult to estimate because it depends on the thermal capacity of the building materials and is large in the case of masonry buildings and small in the case of frame buildings. For this reason, the designer must take into consideration such things as concrete floors and walls in basement rooms. Where a mechanical system of ventilation is employed, the supplementary heat required for

(continued on page 123)

CITY VIEW SCHOOL, OTTAWA, ONTARIO

ABRA, BALHARRIE & SHORE, ARCHITECTS

James More & Sons Limited, General Contractor



1st FLOOR

MAIN ENTRANCE FROM LOWER LEVEL

MAIN FRONT ON LEMON STREET

TOMLEN

ENTRANCE FOYER

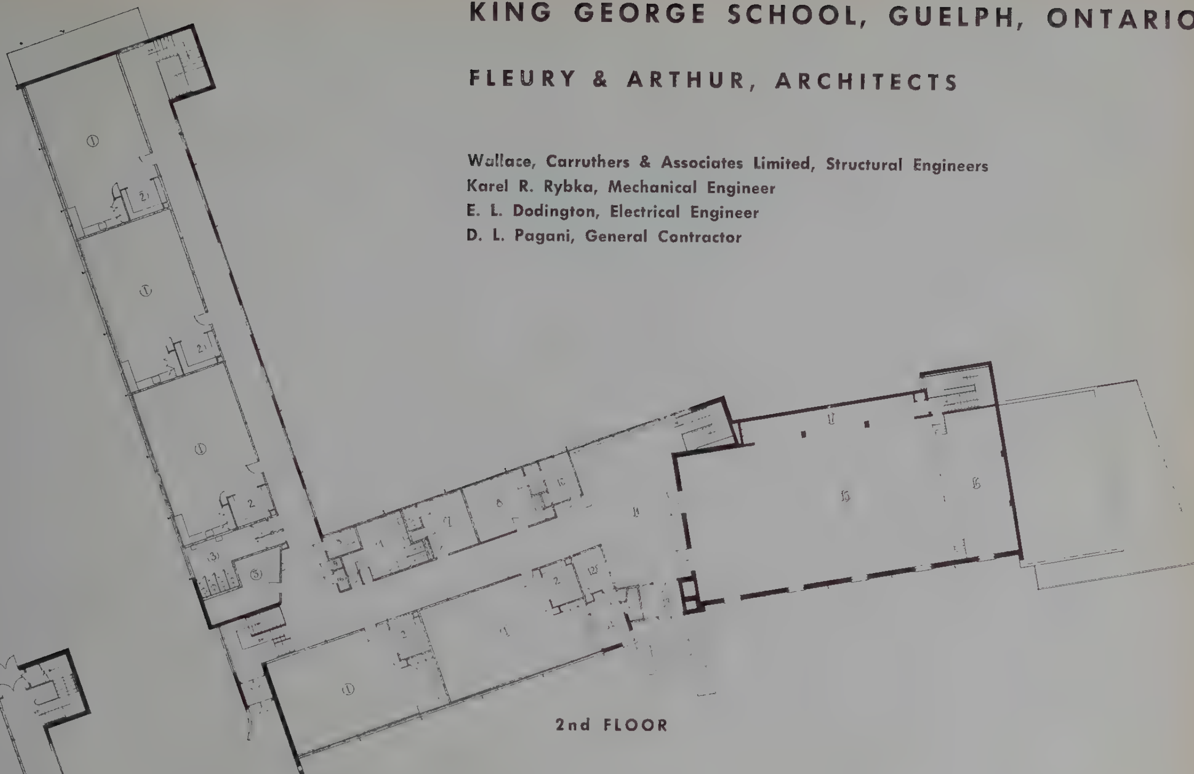
MAIN ENTRANCE

KING GEORGE SCHOOL,
GUELPH, ONTARIO

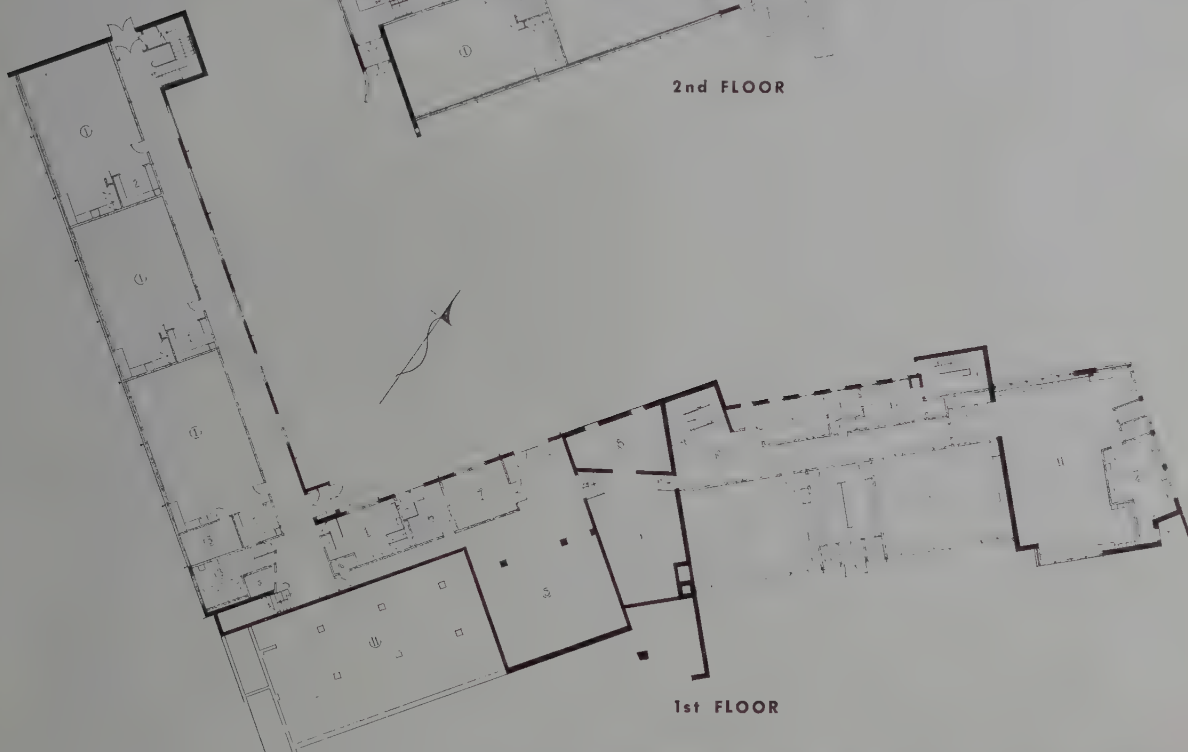
KING GEORGE SCHOOL, GUELPH, ONTARIO

FLEURY & ARTHUR, ARCHITECTS

Wallace, Carruthers & Associates Limited, Structural Engineers
Karel R. Rybka, Mechanical Engineer
E. L. Dodington, Electrical Engineer
D. L. Pagani, General Contractor



2nd FLOOR



1st FLOOR

FIRST FLOOR PLAN

1. Classroom
2. Coat Room
3. Girls' Wash Room
4. Boys' Wash Room
5. Store Room
6. Janitor's Room
7. Electrical Equipment
8. Coal Bin
9. Boiler Room
10. Foyer
11. Kindergarten
12. Cold Room
13. Kitchen
14. Unexcavated

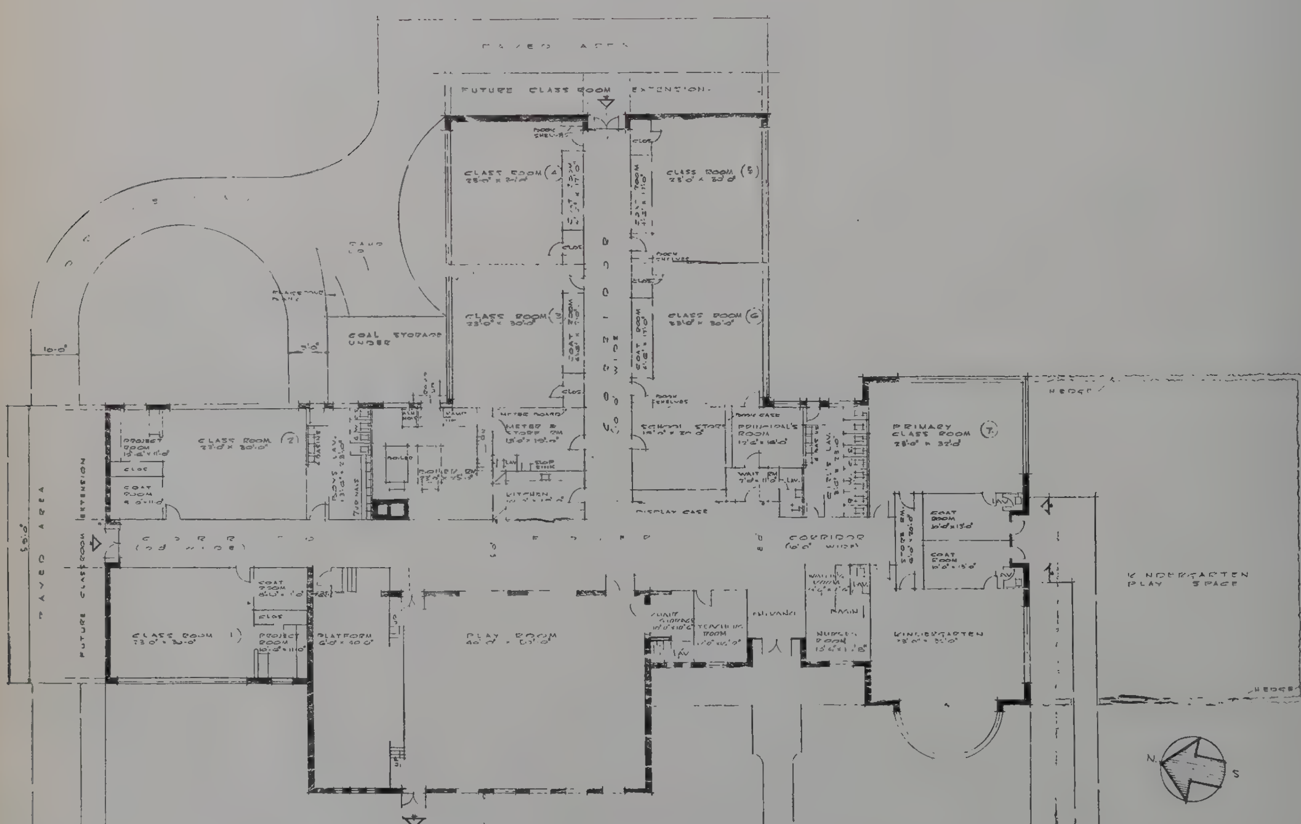
SECOND FLOOR PLAN

1. Classroom
2. Coat Room
3. Girls' Wash Room
4. Boys' Wash Room
5. Store Room
6. Janitor's Room
7. Men Teachers' Room
8. Women Teachers' Room
9. Telephone Booth
10. Nurse's Room
11. Principal's Office
12. Secretary's Office
13. Main Vestibule
14. Foyer
15. Playroom
16. Stage
17. Chair Storage

NORTHDALE PUBLIC SCHOOL, WOODSTOCK, ONTARIO

S. B. COON & SON, ARCHITECT

Fred Stott, Mechanical Engineer
W. H. Cooper Construction Company, Limited



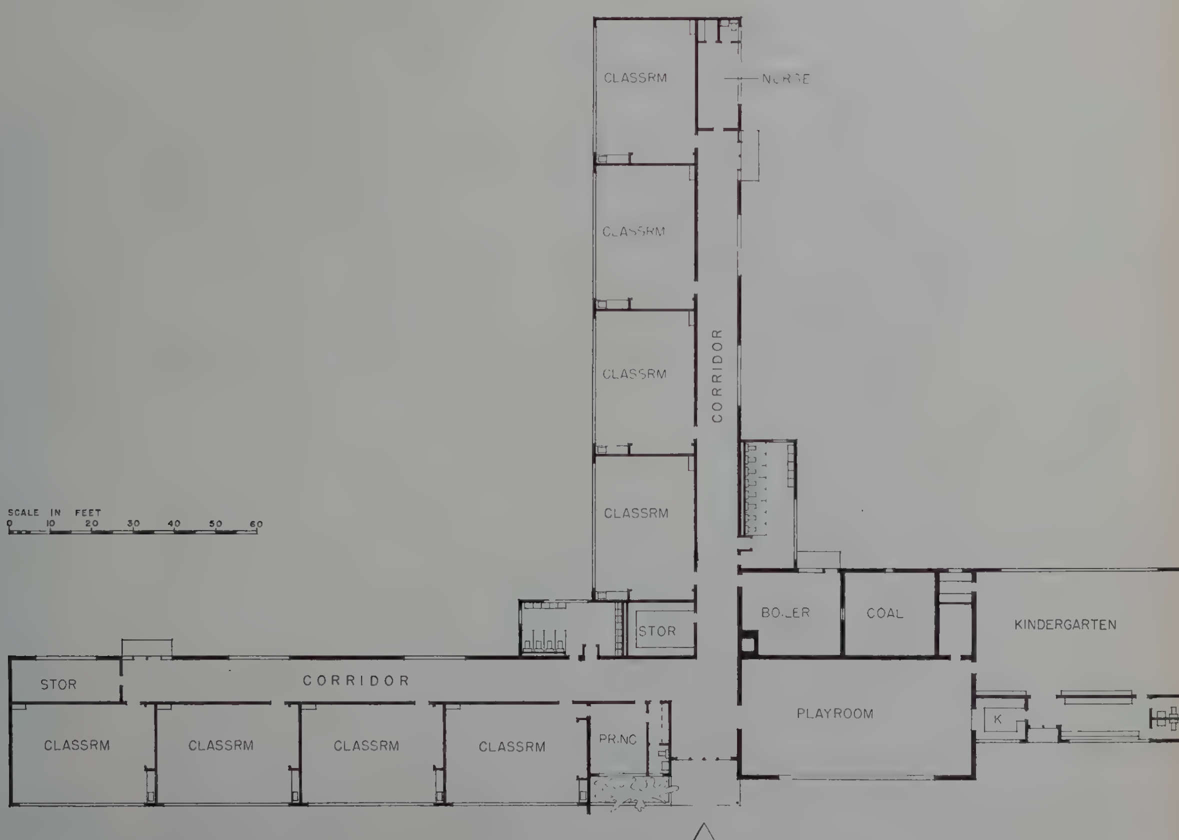
FLOOR PLAN

KEN CUCKSEY

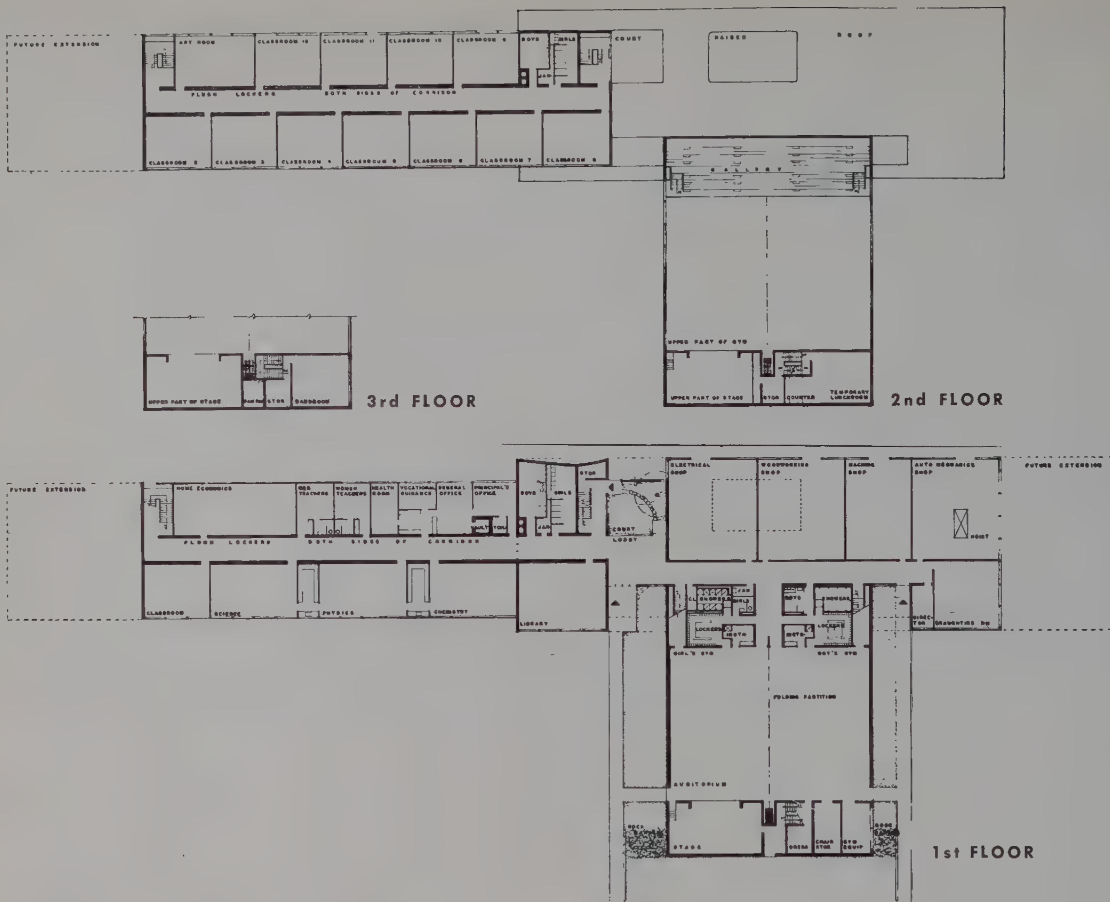
WINSTON CHURCHILL SCHOOL, CHATHAM, ONTARIO

JOSEPH W. STOREY, ARCHITECT

D. J. Sweeney, Mechanical Engineer
Crago Brothers, General Contractors



1st FLOOR

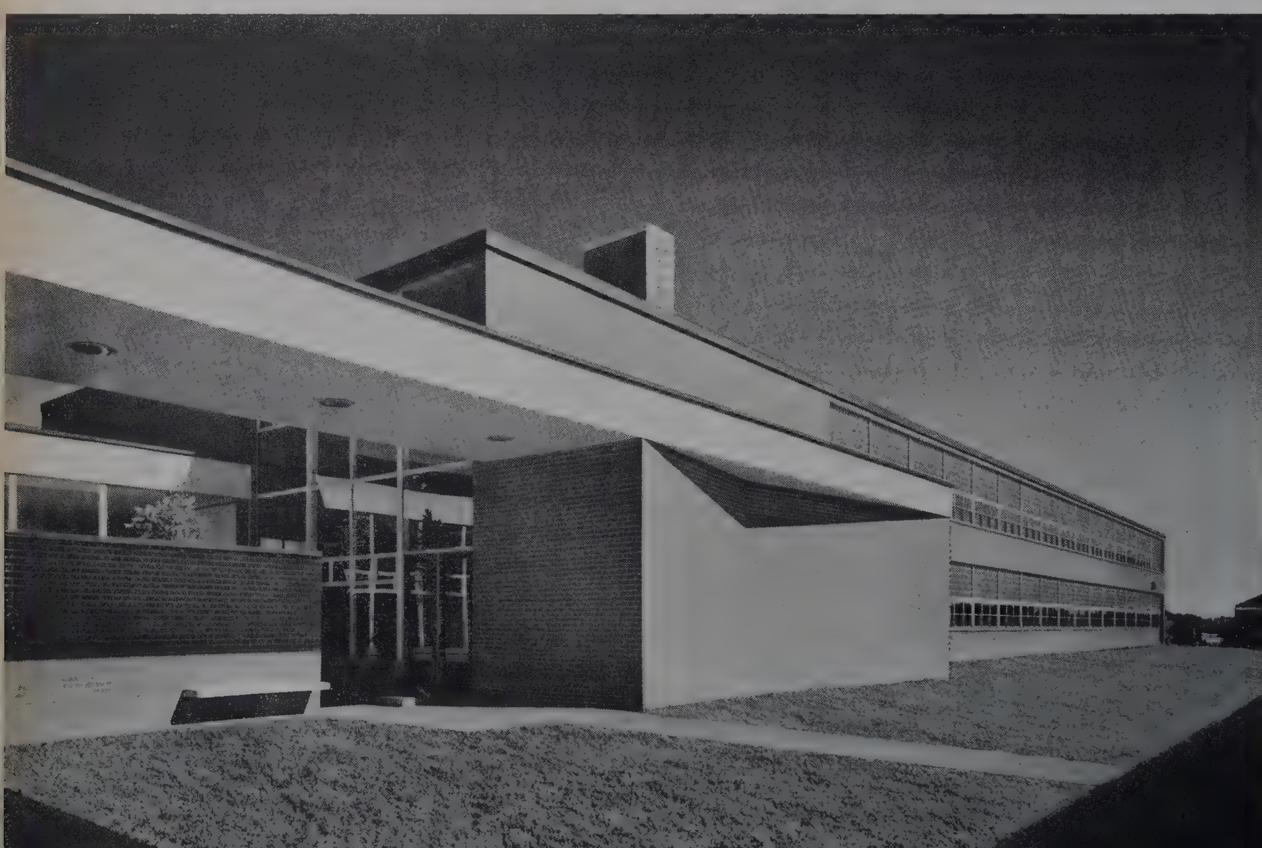


NEW TORONTO SCHOOL, NEW TORONTO, ONTARIO

JOHN B. PARKIN ASSOCIATES, ARCHITECTS

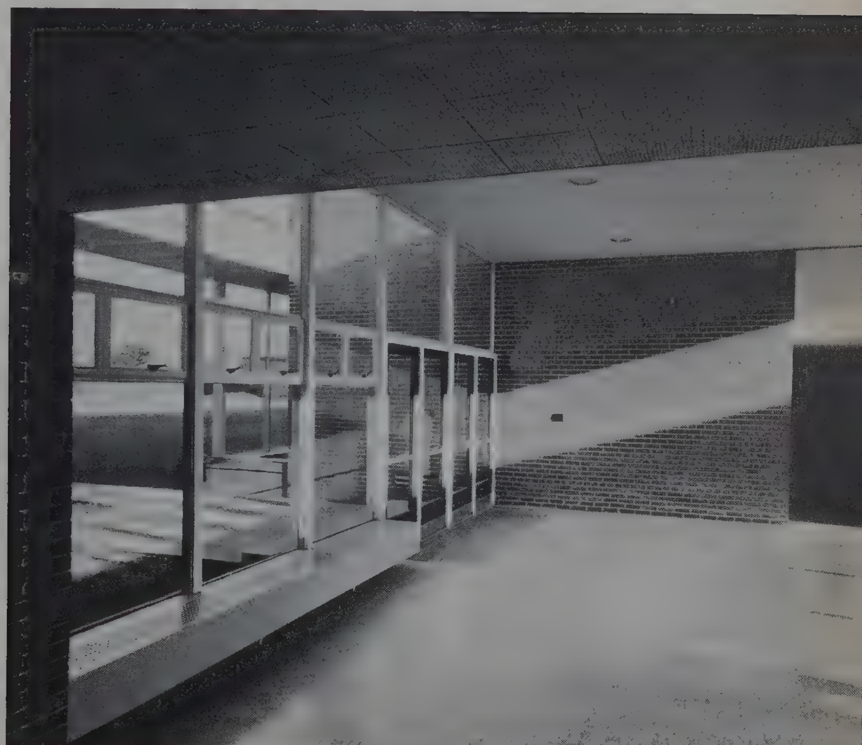
Jackson-Lewis Co. Ltd., General Contractor

WEST OR REAR ELEVATION, CLASSROOM WING AND MAIN LOBBY

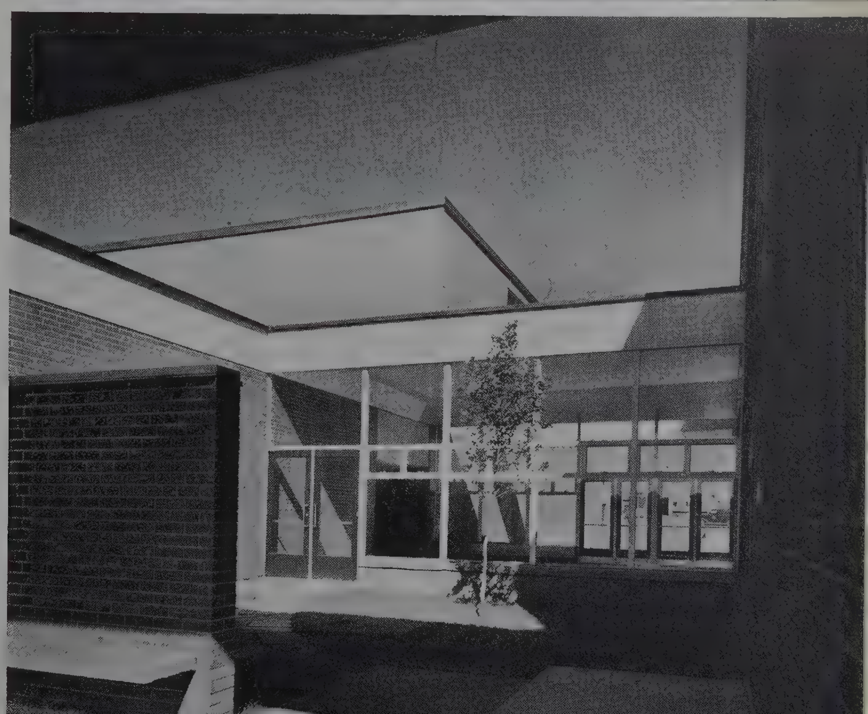


PANDA

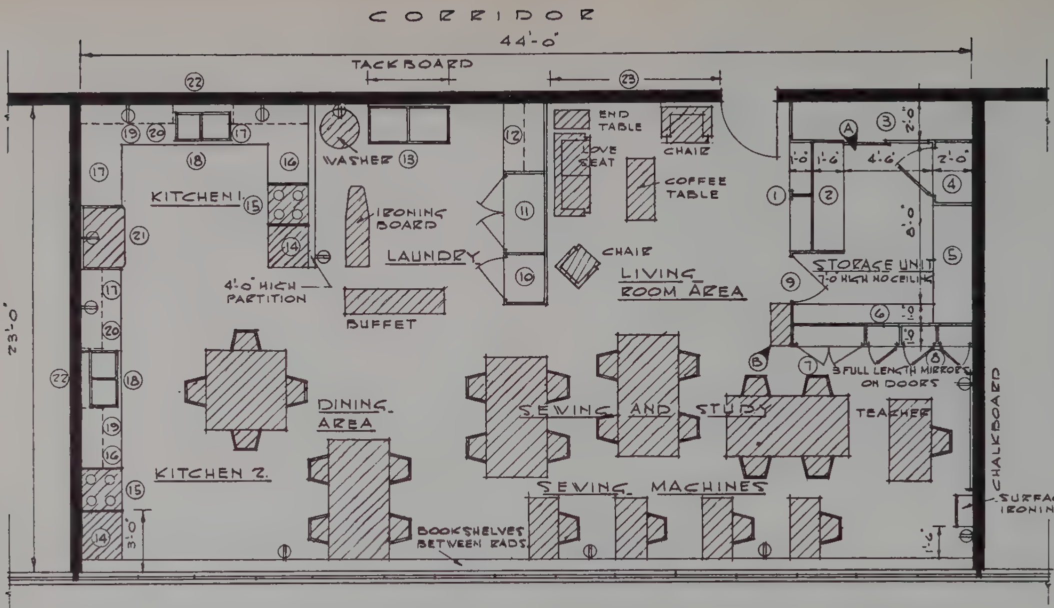
SOUTHWEST STAIR TOWER AND
ENTRANCE CLASSROOM WING



MAIN ENTRANCE LOBBY
FROM GYMNASIUM CORRIDOR



COURT, MAIN ENTRANCE
LOBBY BEYOND,
GYMNASIUM AND
SHOP WING TO LEFT;
CLASSROOM TO RIGHT



FLOOR PLAN

SCALE IN FEET 0 1 2 3 4 5 6 7 8 9 10

NOTES

STORAGE UNIT

1. 24 SECTIONS FOR PUPILS' NOTEBOOKS.
2. OPEN SHELVING FOR TOTE BOXES: 1'-4" BETWEEN SHELVES.
3. WARDROBE, PROVIDE 2 REMOVABLE HANGING RODS 3'-0" & 5'-6" FROM FLOOR, PAIR SLIDING DOORS.
4. TEACHER'S CUPBOARD; DOOR FITTED WITH LOCK. FULL LENGTH MIRROR OUTSIDE DOOR. COAT RAIL WITH SHELF OVER.
5. OPEN SPACE FOR FOLDING BED WITH SHELVES OVER TOP.
6. OPEN SHELVING FOR TOTE BOXES: 1'-4" BETWEEN SHELVES.
7. SUPPLY CUPBOARD, PAIR OF DOORS WITHOUT MULLION. DOORS FITTED WITH LOCK. PROVIDE 8 FULLY ADJUSTABLE SHELVES.
8. SUPPLY CUPBOARDS: DOORS WITH LOCKS, MIRRORS ON OUTSIDE OF 3 DOORS.
9. ENTRANCE DOOR FITTED WITH LOCK.

LAUNDRY

10. BROOM CUPBOARD. WITH SPACE FOR 1 PORTABLE METAL IRONING BOARD WITH STAND.
11. TOWEL HANGING CUPBOARD 4'-0" WIDE WELL VENTILATED FOR DRYING. HEAT OR FORCED DRAUGHT NOT REQUIRED FIT WITH RODS.
12. LAUNDRY CABINETS WITH WORK TOP, DRAWERS & CUPBOARDS.
13. LAUNDRY TUBS; PEDESTAL TYPE; NOT CLOSED-IN BELOW, 36" TO RIM.

KITCHEN

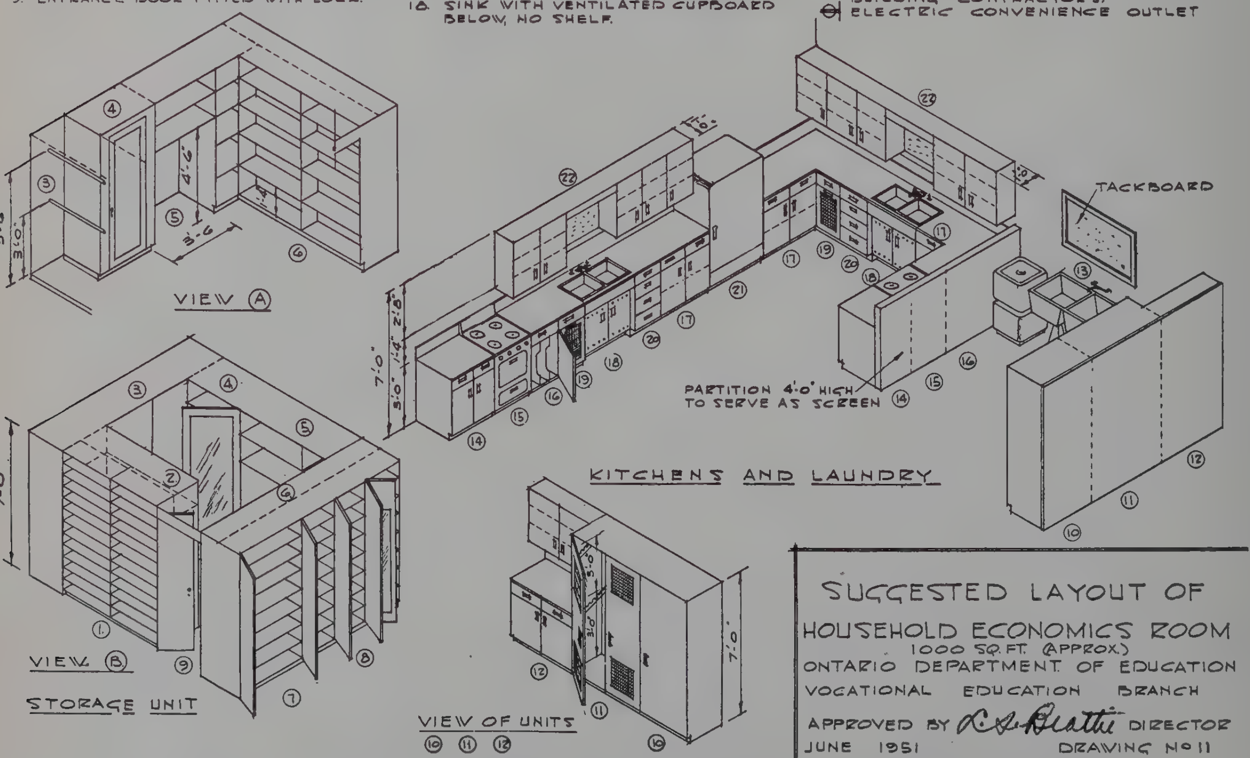
14. WORK SURFACE: MAY BE PART OF STOVE, OR AN INDEPENDENT PORTABLE CABINET.
15. STOVE: GAS OR ELECTRIC, PROVIDE ELECTRIC OR GAS CONNECTION.
16. TRAY RACK.
17. CUPBOARD WITH ONE LOOSE SHELF.
18. SINK WITH VENTILATED CUPBOARD BELOW, NO SHELF.
19. PULL-OUT TOWEL RACK, VENTILATED.
20. DRAWERS - TOP DRAWER 4" SECOND DRAWER 6", BOTTOM 2 DRAWERS EQUAL
21. REFRIGERATOR - ALLOW 3'-0" REFRIG. SPACE
22. OVER SINK - BULLETIN BOARD, CONCEALED LIGHT

LIVING ROOM AREA

23. WALL ON LIVING ROOM SIDE TO BE KEPT CLEAR OF PIPES, P.A. SYSTEMS AND PANEL BOXES TO PERMIT PICTURE HANGING.

GENERAL NOTES

— ALL ITEMS EXCEPT THOSE SHOWN [hatched] SHOULD BE INCLUDED IN THE BUILDING CONTRACT
— ELECTRIC POWER OR GAS SHOULD BE BROUGHT TO STOVE LOCATIONS BY BUILDING CONTRACTORS.
ELECTRIC CONVENIENCE OUTLET



The illustration, above, is typical of the drawings of specialized rooms in secondary schools published by the Department of Education, Queen's Park, Toronto, Ontario. The research which lead to the publication of these diagrammatic drawings was the joint effort of department officials and a committee of the OAA. The diagrams, as a whole, will not be reproduced in the *Journal* as was suggested by the notice on page 387, December, 1951.

NORMAN E. REIMER

ON THE LONDON COUNTY COUNCIL

ONE MORNING, perhaps eighteen months ago, I found myself seated in an ante-room in County Hall in London, waiting an appointment with a board, whose special duty it was to interview candidates for employment in the London County Council. To while away the time, I took a type-written page from my pocket, and began casually to read:

ARCHITECT'S DEPARTMENT

Architect to the Council — R. H. Matthew, A.R.I.B.A.

Deputy Architect — J. L. Martin, M.A., D.PHIL., F.R.I.B.A.

The constructional work of the Architect's Department is carried out in the Concert Hall, Schools, General, Housing and the Maintenance and Improvements Divisions.

The Concert Hall Section is engaged on the design, working drawings, etc., of the Concert Hall on the South Bank site. This Hall is to be completed in time for the 1951 Festival of Britain Exhibition.

The Schools Division is responsible for the design and erection of educational buildings of all types — primary and secondary schools, technical institutes, training colleges, etc.

The General Division is concerned with the construction of all other buildings apart from schools and houses, and at the present time the schemes on hand include civic restaurants, health centres, store buildings, homes for the aged, poor, etc.

Housing Division — Preparation of housing layouts, and design and erection of houses and block dwellings on the Council's housing estates.

The Maintenance and Improvements Division deals with alteration and improvement work of varying magnitude for all Council buildings, including schools.

The following notes may be of interest to applicants for employment on the technical and professional staff of the department:

Candidates are interviewed by an Appointments Board, who will recommend their engagement if they are suitable, and the rate of pay that should be offered. The commencing rate of pay . . .

"Mr Reimer, would you please step this way. The board will see you now." I rose from my chair in the oak-panelled waiting room in County Hall, and thus embarked upon a relationship which was to last for some four or five months.

At that time, a friend and myself had been in London for several weeks, seeking employment for the winter. We were not familiar with the nature or quality of the work done by the Council; however, we decided to accept positions with the LCC, as we were to be placed together to form the nucleus of a six-man design team for the production of a "Comprehensive High School," the nature of which I will outline shortly.

As is the case in most Public offices, there were in existence here scales regarding position of employment and rate of pay. I was engaged as a "Temporary Technical Assistant," the "technical" differentiating me from the clerking staff of the LCC.

The arrangement in this instance was roughly as follows:

At the top were the Architect to the Council, and his deputy, both excellent men. Next to these were the chiefs of the various departments, such as schools, housing, and town planning. At this level there were also several special assistants, or consultants, also men of exceptional ability. Under the department heads came positions known as Grade I, Grade II, and Grade III. These people were in charge of individual projects within each department. At the bottom came the masses, of whom I was a representative, affectionately termed "Technical Assistants." We did the bulk of the sketching, draughting, etc., and earned roughly enough money for the rent, a few meals, six pints of bitters a week, one cinema, one or two concerts, and a bi-monthly trip on week-ends to such places as Canterbury, Winchester, or the Coast. As a result, my stay in England was a very pleasant one, notwithstanding the non-existence of a pork chop.

The work of the LCC might be divided into two classes, the first being the rehabilitation of not too severely war-damaged structures, and the second the replanning of neighbourhoods of London and the design of new buildings for them. The work in the first category was not very interesting, except perhaps to an elderly romanticist, as the normal procedure, and rightly so, was to retain character, materials and style. The guiding principle of the second was the attempt to seek out and put into practice, those elements of design, proportion, structure, and colour which would satisfy the present age, and emulate the accomplishments of its other art forms.

A project, in this instance a given community planning problem, would first be placed before the planning staff which, after due consideration and study with regard to thoroughfares, population probabilities, and those other considerations which comprise the contemporary town planner's stock in trade, would then pass it on to the design staff which would proceed to develop the various buildings, whether they be blocks of flats, primary or secondary schools, or what-not. The vast amount of work undertaken by the Council necessitated the further breaking down

of design staff, as above mentioned, into departments specializing in the design of one particular type of building. Thus, a young designer in the Council's employ might spend several years engaged only in the production of a concert hall, or a series of flats, or perhaps a school. The school's section underwent further division into primary, secondary, and comprehensive high school sections. From this it may be seen that the LCC Architect's Department represents perhaps the boldest example of its type of public office in existence.

It was desirable, nay, a requirement, to execute new work in what is known as the "Contemporary Aesthetic." Thus, draughting boards were covered with drawings of shell concrete roofs, buildings on pilotis, envelopes of precast concrete and glass, partition walls of two-inch thickness (made up in a "honeycomb" prefabricated unit), all combined with an exciting use of colour, both inside and out. In view of the disturbing fact that in our present developed society the government is normally the last client to recognize the value of new thought in the design of its offices and institutions, this was a very heartening development. The first fruit, in London at any rate, of this policy, is the new Concert Hall, which was Council designed. The new Comprehensives and Flats, which we hope will soon dot the London landscapes, will be the next crop. This same feeling is evident in other parts of England and France: in Coventry, in Hertford and in Marseilles.

I hesitate to reflect on Canada's position in this light. Of course, we may always derive justification for this in the rationalization that Canada is a young country. But for how long?

Of the Concert Hall I shall say only a few words, as it was very nearly completed when I arrived in London (certainly so were the design and working drawing aspects of its execution), and it has since been amply presented in various English Architectural publications. On several occasions, some friends and myself made brief excursions into the unfinished building to mark its detailing, which was very precise, and in some instances, such as the plate glass balustrades, marble walls, and teakwood stair treads, rather lavish. One criticism, not in the sense of vilification, which was not my own, was that the Hall was "too consciously designed." Make of this what you will. On the Housing Division I can make but a few casual observations, with regard to apparent type-structures; which would be the two floor Row-House, three floor Walk-up, and six to nine floor elevator-access block. The latter was of necessity, as economy permitted no greater extravagance, of the balcony access (horizontally) principle. The clean-cut design, with individual off-living-room balconies, was faintly reminiscent of Swedish precendent. Of the General Division, concerned with restaurants, homes for the aged, etc., I have very little knowledge, and will therefore say nothing.

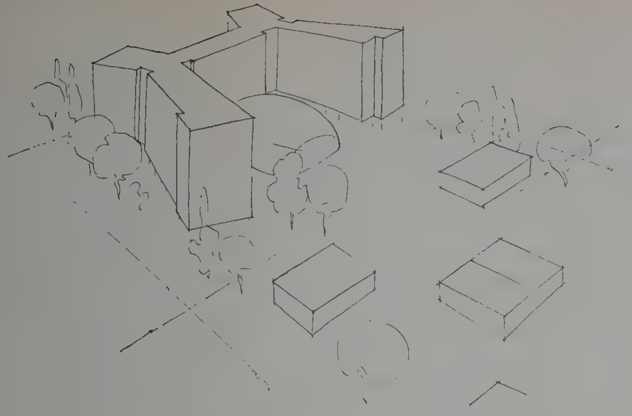
In the Schools Division, to which I contributed my labours, there were upwards of a hundred men, engaged in the design and execution of numerous primary and secondary schools, and perhaps half a dozen "Comprehensive High Schools." These "Comprehensives," as they were known, represented a considerable departure from the traditional English school system. They were the grouping, under one roof, of the Grammar, Technical and Modern School (roughly the equivalent of Canada's Matriculation, Technical, and Business Schools, that is, her Composite High Schools); and compassed grades seven to twelve. Some were co-educational, and some not.

On each of the projected "Comprehensives" a design team of two to six people was put to work. The period for design might last anytime up to four or five months, 'till an aesthetically satisfying, and economically feasible, solution was arrived at. During this period, many sketch plans, perspectives, and perhaps several models, would be produced and considered. At times I thought the procedure a trifle extravagant, but then, a public office may enjoy the luxury of time to a greater degree than a private office. It is here interesting to observe that a "functional" architecture has not developed from austerity-ridden England as it did from Germany after 1918. In point of fact, many architects with whom I became acquainted, were of the opinion that all architecture is a result of the aesthetic of the individual grasping the pencil. This will, of course, be reflected in their work, and leaves very little room for functionalism as the dominant factor.

The sites given over to Comprehensive schools by the planning staff were, in the main, rather restricted as to size, and in some cases, to approach. The average area was in the neighbourhood of nine acres (this to accommodate 2,200 pupils and extensive training and teaching facilities). After one had placed those things, such as gymnasia (five in number), workshops (five), and auditorium, which had to be on the ground, there was very little to do but rise up in the air for the sixty odd classrooms, in order to retain any sort of satisfactory playground area. This, in turn, necessitated the use of elevators, of a size, speed, and number, to move whole classes of pupils in the five minute or so break between classes.

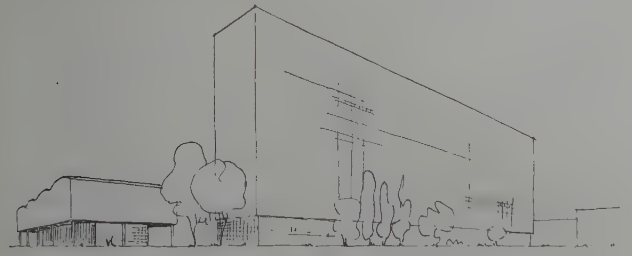
The problems were these: The cost limit was placed at approximately $700 per pupil, or, roughly, a million and a half total, (these figures are based on direct currency exchange, and really bear no relation to comparative building costs in our two countries). This was very difficult to meet. Second, according to custom, the whole school body attended a morning assembly, immediately after removing cloaks, and being marked present. The designer's imagination is forced to pause in the face of exhausting 2,200 young boys and girls from a six to nine floor tower to a ground floor hall in a matter of minutes. I must give credit to those designers who grappled with this problem. Third, also according to custom, hot meals had to be provided for 80 or 90 percent of the school body every lunch hour. This would not have been so difficult had a money allowance been made for dining rooms, which it had not. In fact, we were not to be allowed the extravagance of a separate dining room. The fourth major problem was the desired community use of some of the facilities, in the nature of evening classes or presentations, either music, or drama.

Of the half dozen attempts to solve these problems, several are very interesting, and worth discussing briefly. These were known as "Strand," "King's Park," and "Putney." As we shall see, they were in some respects quite similar, and in others quite different.



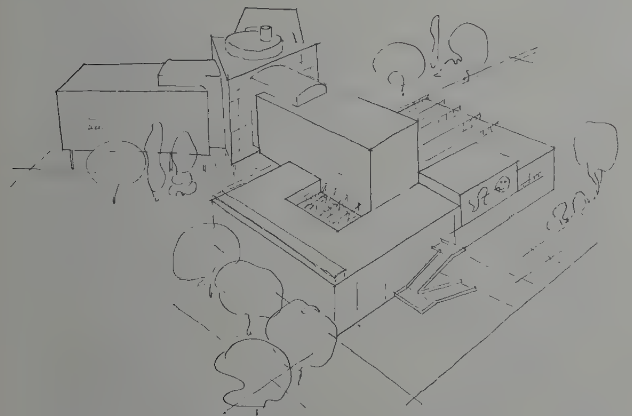
KING'S PARK

"King's Park" was the earliest, and had, I believe, the largest site. The solution was a six-floor classroom block, with four elevators, the auditorium and drama theatre on the ground at its base; and workshops and gymnasia scattered separately over the site.



STRAND

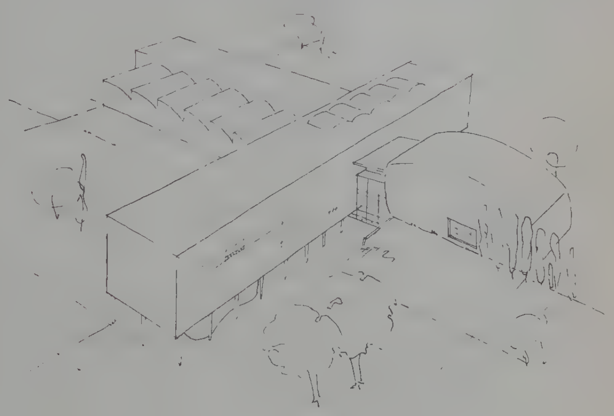
"Strand" had the smallest site, and was very restricted as to approach. None of its sides fronted on a street or even on a lane. On two opposite sides, it had walkways of 20 feet width through to a street. The solution in this instance was very interesting. Classrooms went into a nine floor slab-like structure approximately 30 feet by 300 feet, one room in depth. Vertical access was gained by four elevator-stair towers spotted along one side of the slab. Through corridors existed on only every second or third floor, intermediate floors having discontinuous corridors extending a short distance in either direction from the elevators. Thus, classrooms would have one wall of glass, laboratories, where no through corridor existed, would have the greater depth, and two walls of glass. The analysis here of elevator traffic was, to say the least, remarkable. The gyms were one mass, and the workshops-auditorium, another, on either end of the slab-tower, as its base. The ground floor of the tower was devoted to lobby areas and cloaks.



PUTNEY 1

In "Putney Park Lane" (often referred to as the Canadian Comprehensive), an attempt was made to retain the minimum ground coverage and, at the same time, reduce the height, thereby improving the functioning of the tower classroom block. The various teaching facilities which constituted the school were divided for purposes of design into two groups. The first, comprising workshops, gymnasia, and the like, was conceived as one large two-floor rectangular volume. The second, including classrooms, laboratories, etc., was fashioned into a four-floor double banked "Y"-form tower on pilotis; the two then being articulated as a whole. Perhaps in the opinion of many modern designers this approach might appear to be one of forcing as a result of preconception, however, I do not believe this to be necessarily so. As all design is a function (aesthetic understood), of light source and circulation, one need merely choose a geometric form which satisfies these conditions, and distribute his rooms. The criticism received was of the nature anticipated; however lacking the foundation of study of a clear understanding of the solution.

At any rate it was rejected, and a new approach embarked upon. This second solution was much the same in principle, but those functions which the first had grouped in the one two floor volume now were to be grouped in two volumes, and the "Y"-formed tower straightened into the rectangle. The functioning of the second solution did not approach the subtlety and precision of the first; and in appearance was not so striking. The choice of this second solution seems to me to be an example of that lack of desire in most people to pursue an idea to its logical conclusion, but rather to stop at the half or three-quarter point. Thus Corb's flat at Marseilles is criticized with the words "he goes too far." However, this judgment, when levelled at an Englishman, may not entirely apply. The English, with their very human intimate tradition, exhibit preference for what might be termed courtyard design, inherent in which is a sense of decentralization rather than centralization. Our first solution for "Putney" was extreme-



PUTNEY 2

(continued on page 123)

INTERIM REPORT BY THE 1950 COLLEGE OF FELLOWS' SCHOLAR

The scholarship fund was used to enroll in the Graduate School of the Massachusetts Institute of Technology, Department of City and Regional Planning. The course was started in September, 1950 and completed in three school terms by January, 1952. The topic for the required thesis was titled "Performance Standards for Residential Zoning and Subdivision Controls". This was an attempt to evolve zoning and subdivision regulations based on performance requirements rather than the present practice of the use of finite spatial dimensions. With the acceptance of this thesis, the degree of Master in City Planning, M.C.P. was received in February, 1952.

The nature of the studies undertaken was an attempt to understand some of the more fundamental social, economic, technological and other forces that shape our physical environment. The various courses taken at both M.I.T. and Harvard University included such subjects as Urban Land Economics, Government and Administration, Housing, Planning Legislation, Economics of Industrial Location besides those of a more technical nature like Site Planning, Municipal Sanitation, Transportation, etc. These courses covered such aspects as the phenomena of population make-up, growth and movement, real estate, urban redevelopment, slum clearance, municipal financing and many other social, economic, physical and even visual problems of the urban environment. The various U.S. housing and urban redevelopment acts, enabling legislations, zoning and its development, constitutional basis, court decisions and other topics were covered. Under the all-embracing heading of a seminar course, Theory and Practice of City Planning, the attempt was made to appreciate in toto the various relationships of the topics mentioned above. Then in the major design problems, the knowledge gained was put to practice starting with field and library research, preparation of maps and reports, tables, etc., and then ending with possible solutions, methods of financing and implementing and so on. These major problems included a regional development project, preparations of a plan for a new steel town involving a population of about 27,000 and an urban redevelopment project.

In the course of research, seminars and discussions, such subjects as the use and value of the scientific method in the social sciences, public relations, and the various theories about the growth and development of urban areas, definitions of terms, field of competence of planners and numerous others were presented and discussed.

The Intent of the Final Report

Though the studies were confined to a great extent to the scene in the United States, there was much to be gained. The fact that there are a number of similarities in the ways of life, in the structure of our physical environment, etc., the nature of the planning problems and so on are quite applicable to the scene in Canada. As the scene presents itself, we are as yet to realize the intensity or complexity of the planning problems encountered in the United States. In this situation, it would be criminal not to take advantage of the experience of the U.S. and to implement a program that will prevent the need for the tremendous social and economic costs besides the rigid regulations that results from the lack of preparedness as exemplified in the United States and to a greater degree in Great Britain. We should not, as one American student expressed himself when discussing flood control measures just after the recent Kansas floods, "Do it the American way; wait until it's too late". To be sure, the present state of world affairs indicates that all societies are guilty of waiting until it is too late.

The contribution that architects can make in the Canadian scene is difficult to define. However, it is the intent of the final report of the scholarship to show that there is a dire need for the active participation of architects in specific planning problems if we are not to be saddled with the type of "design restrictions" that is becoming increasingly apparent in the United States. This need is urgent since already much has been adopted by many Canadian communities without the careful scrutiny that is warranted. To briefly illustrate this point, take for example the ordinary zoning regulation. The major drawbacks of these present regulations are mostly due to the assumption that the same regulation will have the same effect on every parcel of land with which it deals. This has lead to the resolution of control measures to exact spatial dimensions. Also for reasons of administration this was thought to be best. But a recent survey[1] shows that 62 out of 68 cities (including several Canadian cities) have had to grant variances to these rigid requirements. It should be obvious that a 30-foot setback requirement on a 100-foot depth lot has not the same effect as the same setback on a 150-foot or even a 110-foot lot. Similarly, a side yard aggregate width requirement of 12 feet on a 50-foot lot presents difficulties infinitely greater than the same restriction on a 70 or even a 55-foot lot. The cumulative effect has a discouraging effect on the designer and the result, to say the least. The recent active interest and participation of the American Institute of Architects in the preparation of the Harrison, Ballard and Allen report for the rezoning of New York City is indicative of the architectural concern there necessitated from the realization that poorly conceived zoning ordinances prevents good design.

In the field of housing and urban redevelopment, similar results are evident. Regulations pertaining to space requirements, in fact overall design policies established without any or little consideration of how physical design can contribute to a good solution, leave little freedom for the architect. The reasons are many but the basic fault lies in the fact that most policy makers are unaware of the contribution of good physical designs and the architects in turn are to blame for not protecting their own interest to put it bluntly.

With the permission of the Scholarship Committee, the final report will take form of a series of papers dealing with the above mentioned and similar considerations, to which the writer has become aware through the use of the College of Fellows' Scholarship fund.

K. Izumi

[1]Burnham, O. W. and Johnson, M. E., "The Use of Special Exceptions in Zoning Practice" (M.C.P. Thesis, M.I.T., Cambridge, Mass., 1951) p. 47.

NEWS FROM THE INSTITUTE

ALBERTA

There is a question much discussed in the prairie provinces about which people in other parts of Canada do not much concern themselves, and these may be surprised that the question should arise at all. This is the question of "row houses" as they are here generally called. A row house is one in a row of any number above two close up together side by side. In cities where terraces of houses are quite usual it may surprise people to know that row houses are prohibited by regulation in many western cities. When the question is brought up for discussion a prompt and positive ban on the row house is the usual majority answer. Duplex houses, two-flat duplexes and apartment houses are freely admitted in their appropriate zones but no row houses. It is illogical that three or four contiguous houses are forbidden where apartment houses are permitted, since apartments provide less desirable family accommodation. The reasons for and against the row house are worth examination.

A consequence of the prohibition of the row house is that the great majority of minor residential streets present the appearance of straggles of individual houses each detached upon its own lot and each designed, or at any rate evolved, in a way of its owner's own with no thought of relationship to its neighbours in its general shape, material or colour. Such a scene must appear both sore and sad to every architectural mind. But when the architectural eye is cast upon the scene other considerations become evident. These houses usually face upon avenues which are avenues indeed, that is to say, they are tree-lined, grass-boulevarded and exhibit a share of nature's beauty. The houses themselves being set back twenty feet or more from the front property line, the eye becomes engaged in a profusion of trees, hedges and flower beds. In fact the houses themselves are not the prominent objects in the general view in which not more than two or three can be even partially glimpsed at one time. It is rather a landscape picture than an architectural one. The views, however, on these avenues tend to become monotonous when, as is usual, each extends in a vista without interesting termination or punctuation.

Attempts have been made to improve upon the currently existing want of system. It has been suggested that some interesting variety may be introduced by bringing forward the end or the central houses and setting the others farther back. It would be difficult to enforce this as a regulation and it would be completely futile without control of the design of the houses themselves. It would, further, involve some destruction of privacy in the gardens that become overlooked by neighbours and would deprive some of their fair amount of sunshine. Preferable to this would be the strict preservation of the general front line of the buildings and the use of the contrast of the gabled front with the level eaves front. A further means of unification is the connection of house to house by a one-storey wall with gateway. In any case original single ownership and design is essential for the production of good frontage design.

The architect may love to play with blocks of three, four, five or six row houses beautifully arranged with charming open spaces interspersed. But he has to remember that the end houses in each case command higher prices than the inside ones. The individual who wants a house of his own feels himself cheated if his house has no side approach, and when he finds that the garden trash from hedge clippings and lawn mowings and perhaps fertilizers must be carried through the house to be disposed of. When row houses are mentioned there rises in the mind the spectre of the interminable terraces of long unlovely streets produced in the earlier stage of the industrial era.

There are, however, formidable arguments in favour of row houses. One of these is the possibility of really beautiful arrangements by formal grouping. This argument of itself will not sway popular opinion. Much weightier is the economic pressure. The shortage of family housing is perennial. The row house offers some relief. Accommodation for families with small children is of prime importance. Row houses provide much better accommodation for this class than do apartments. The unit cost of apartments increases with the number of storeys. The cost of four contiguous houses is substantially less than that of four separate houses both as to the building itself and as to the services. Heating is greatly economized. The ground is more economically used and without congestion. These arguments are so cogent that they must win out in the end.

It has been said that "abnormal life begins when a man ceases to have his own field and his own house." A small lot and a row house in a city may be a poor substitute for a country life, but it provides something more approximate to normal life than a rented third floor apartment. It may be "a poor thing, but mine own."

Cecil B. Burgess

MANITOBA

The Annual Meeting of the Association was held on February 4th, 1952 at the Fort Garry Hotel. There was an excellent attendance, although few of the older architects were present. The younger men are showing an interest in the Association, and were out in full force. The results of the heavy post-war classes at the Universities are being shown in the Association and undoubtedly in other Associations.

The report of the retiring President, Mr. Leslie Russell, was well received and a vote of appreciation was given to him for his untiring work on behalf of the Association. The usual reports were adopted.

Professor John Russell, head of the Architectural Department, gave an interesting report on the School and

its work. The Professor is to be congratulated on the excellent work being done and for the enthusiasm of the students on their problems. The Association again voted two $100.00 scholarships to the School.

There are many problems which present themselves to the Association and have caused much concern during the past few years. Whilst the Association has the power to restrict plans being made by non-architects in excess of $35,000.00, the practice is still carried on. Either the law should be enforced to the limit or the whole matter dropped and unless there is a concerted action by all architects the practice will continue and grow. Now is the time to tackle this question when work is plentiful, not wait until the slack times when even the bones are snatched away. This is a vital matter for the younger architects. An advertising plan is being tried out in the *Manitoba Trustee*, a paper reaching School Trustees, and it is hoped this will be the start of an educational campaign among the rural areas.

Messrs. E. W. Thrift, E. J. Smith and P. M. Casey were elected to a three-year term of office as Members of Council. Mrs. Douglas Chevrier has been appointed Executive Secretary of the Association.

On behalf of the Association, Mr. Gilbert Parfitt presented the retiring Secretary, Mr. Fitz Munn, with a pair of travelling bags as a token of esteem and appreciation of Mr. Munn's valued assistance during the thirty-eight years in which he held office. This is quite a record. Mr. Munn was the third Secretary, the late Mr. Percy Over being the first. Mr. Parfitt spoke of the years and state of the Association and the times when he first met Mr. Munn. The Association in the early 1900's was in a flourishing condition, having its own rooms and the members meeting together for luncheon every week, until a fire started the breaking up of these get-togethers. The speaker, on looking around, said he felt a stranger but left a suggestion that the young members should follow the example of the earlier days of the Association and get together not only in a social way but for the discussion of the affairs of the Association.

The Annual Dinner followed in the MacDonald Room of the hotel. Mr. Konrad Wachemann of Chicago was the guest speaker. His talk on Prefabrication, illustrated with slides, was of great interest and thoroughly enjoyed.

Gilbert Parfitt

ONTARIO

A rich and satisfyingly useful life awaits the young architect who settles in a smaller city. That such opportunities are overlooked by many young men is indicative of the change that has taken place in the profession.

In my early days, a young man entered architecture with the thought of studying and gaining practical experience so as to work up through the various departments to the finality of independent practice. Today, young men consider a college degree as insurance of their capacity to practise.

With due respect to our educational institutions, this is far from the truth, and the two years of experience required before registration is woefully insufficient. This is generally acknowledged among members of the profession but it has been impossible to change the condition due to various pressures.

Some young men graduating from university and having two years experience have immediately attempted to practise. Some, of course, have succeeded and some have failed, but all must have had a very difficult time and many embarrassing situations must have arisen until they accumulated enough experience to acquire confidence. Possibly for this reason, many such young men gravitate toward the larger centers, particularly Toronto, where they have the benefit or associating with others who are experiencing the same things and benefiting accordingly.

This trend is not altogether a healthy one. The larger centers look very attractive to the young men because of the great volume of business done there and from there. But they are inclined to lose sight of the fact that more than half the registered architects of Ontario are already in Toronto. Not only is the competition very keen; business contacts in the larger centers tend to become very impersonal.

The wise young man, particularly at this time, should carefully consider settling in one of the smaller centers, among which are Windsor, Chatham, Sarnia and London — cities with which I am familiar.

The practice of architecture in a smaller center is a very personal thing. Because there are fewer people, it is possible for the architect to know personally all or nearly all the important men in the community. The architect can become an integral part of that community, just how large a part depending upon his personality and ability. He finds himself in the position where he is not seeking commissions, but where commissions are seeking him; this is an extremely healthy position for the profession and for the individual.

My own city of Windsor is a specific example. Practically all members of the profession active here today started their practices between 1918 and 1924. Their average age approximates 65. In Windsor, there is not one registered architect who is young enough to carry on the tremendous volume of work after the few years which will elapse before the end of active work is reached for those at present practising.

Several young men could come into Windsor and by being patient for five or ten years, during which they would earn good incomes, they would collectively inherit practices that are really worthwhile. If this does not happen, we will sooner or later arrive at the point where young men will have to come in to take a practice and if they are then inexperienced and unacquainted with the community they will have a very rough time. The result might be the loss of everything that has been built up by the profession during the past 30 years.

I personally can leave my house in the morning and be in my office in 10 minutes time. Anyone practising in a smaller center can do likewise, but how many Toronto architects are able to do so? I do not suppose the situation in Windsor is entirely typical, but I believe it is true of many communities. I only regret that young men do not seem to be taking advantage of the opportunities which smaller centers have presented for some years, and still present.

Hugh P. Sheppard

THE HEATING AND VENTILATION OF SCHOOL BUILDINGS

(continued from page 108)

warming up may be supplied from this system and this is the least expensive way to provide it. However, the designer must supplement the heating elements in rooms not provided with mechanical ventilation.

The selection of a heating medium for a school depends largely on the size of the school and the quality of heating which the owners are prepared to pay for. For small schools up to four classrooms, forced warm air heating is often satisfactory in moderate climates. A better quality of heating is obtainable, though, with hot water heating and this medium is very popular in smaller schools. Both warm-air heating and hot-water heating enjoy the advantage in the fact that they lend themselves to automatic control without much attention from skilled operators. On the other hand, when steam is employed as the heating medium, most communities require that a licensed engineer be employed to operate the heating plant at all times during the period of operation of the plant. When the school is heated 24 hours a day, it is necessary to employ at least three licensed engineers, which may be quite expensive. Hot water heating has the disadvantage that it is susceptible to freezing if the plant should shut down for any reason. Where schools are not heated at night or over week-ends, hot water heating has the further disadvantage that it is slower to heat up the building than the other heating mediums. For large schools, steam is usually employed as the heating medium. The chief advantages of steam are that it is quick to warm up a building in which the system is properly designed and the heating elements are smaller in size than their counterparts used in hot-water heating. The disadvantages are that they require skilled operators and careful maintenance of steam traps. Furthermore, in rooms not equipped with thermostatic control, steam is more difficult to manually control than hot water.

In summary, then, the selection of any heating medium and the design of any heating and ventilating system depends on a large number of factors which should be given careful consideration before conclusions are drawn. The policy of the school administration in respect of the operation of their heating plant should be positively known, the quality of system which the owner is willing to pay for should be determined and close co-operation between the architect and his heating engineer is essential.

ON THE LONDON COUNTY COUNCIL

(continued from page 119)

ly compacted and centralized, and probably the logical result of a Canadian-trained designer lacking much tradition and desiring much precision.

Having come this far it seems to me the essay thus presented displays very little more than approbation for the LCC and its work. As this feeling will not I fear be shared by all those reading the work, either through virtue of personal knowledge of, or reports on previous LCC work, I feel obliged to substantiate or at least clarify my encomium. I am perfectly aware of the disturbing work executed by the Council since the war. In almost every quarter of London one is confronted by examples of Council housing to which assuredly one would never assign the word architecture. An attempt to rectify this sorry condition was made, according as I am able to infer from conversations in London, several years ago at which time the LCC underwent some reorganization accompanied by the appointment of recognizedly good men in positions of decision and authority. Concurrent with this reorganization came the commissioning of recognized contemporary architects in London with housing projects. Thus, Tecton, Inc., began work on sites on Roseberry Avenue, Busaco Street and in Paddington, and two young senior students in London won a competition for the projected housing scheme in Pimlico. All of these projects involved three or more multi-story blocks of flats. The Council went ahead with schemes of its own, such as Putney, the school for which I worked on. In view of this it is rather difficult for me to present photographs of projected or partially completed Council work; and I hesitate to even discuss that meaningless agglomeration of immediate post-war housing. It is possible however for the reader to investigate in British publications the commissioned work, (Roseberry Avenue, Busaco Street, Pimlico, and soon Paddington) now already standing which is exerting an influence upon the Council's drawing boards.

In closing, and this as a defensive gesture, I should like to justify the brevity of those few personal observations, perhaps rather obscure and demanding of explanation, appearing in the essay, on the grounds that in a 3,000 word account ostensibly reporting a phase of work, it is difficult enough to describe adequately the subject, much less elaborate upon those few opinions regarding my profession which I feel compelled to include. My purpose has been merely to adumbrate the Council and its work within the limits imposed by my brief, and in the main, pleasant exposure to it.

CONTRIBUTORS TO THIS ISSUE

Fred Lasserre graduated University of Toronto, 1934, degree of B.Arch. Graduate studies at the Swiss Federal Polytechnic School at Zurich. Associated for four years with the firm of TECTON in England. Associate Professor at McGill University for two years.

Brought to University of British Columbia in 1946 to start School of Architecture, and is now Director of the School.

Responsible for the design of the following buildings and projects — H M C S York, Toronto; St Cuthbert's Church, Montreal; War Memorial Gymnasium and Swimming Pool at University of British Columbia; Vancouver Civic Auditorium, Library and Radio Center.

Member of the Vancouver Town Planning Commission Executive; Member of the National Industrial Design Committee; Member of the Council of the Architectural Institute of the British Columbia; Member of the American Society of Planning Officials.

Alfred Leslie Perry was born in Montreal. Graduate of Department of Architecture McGill. Worked with George B. Post and Alfred C. Bostrum in New York City, and Nobbs and Hyde, Montreal. Practised in Montreal since

1923 doing a variety of work, but recently concentrating on schools and churches.

Norman E. Reimer graduated from the Manitoba School of Architecture in 1949. Employed by Rule, Wynn and Rule, Edmonton, the following year. RAIC registration 1950. Spent year of 1950-51 in Europe, working for a time in London (with the LCC) on design, and touring England and the Continent from Paris to Stockholm. At present working with Rule, Wynn and Rule, Edmonton.

A. Edward Simpson is a well-known Vancouver consulting engineer. He has had extensive experience in electrical installations in schools, public buildings, and industrial concerns; and is well qualified to give an opinion and to present the electrical problems and solutions encountered in modern schools.

D. W. Thomson received B.A.Sc. degree in Mechanical Engineering at the University of British Columbia in 1937. Attended University of Illinois from 1938-40 where he was employed part time as graduate research assistant in the engineering experiment station in connection with warm air heating research of the National Warm Air Heating and Air Conditioning Assoc. Received the degree of Master of Science in Mechanical Engineering at the University of Illinois in 1940.

Employed by the University of British Columbia Mechanical Engineering Dept from 1940-50. Began consulting practice in the field of heating, ventilating, refrigeration and power plant design in 1945 in Vancouver.

OBITUARY

It is with sincere regret that I report the death of Mr Harold Allison Russell, architect and engineer, a retired member of the Nova Scotia Association of Architects, who passed away at his home in Halifax, N.S. on March 1st, 1952, at the age of 78 years. Son of the late Justice and Mrs Benjamin Russell, he was widely known throughout the province. The late Mr Russell served as District Resident Architect for the Department of Public Works (Canada) in Nova Scotia, and, in a similar capacity, in Regina from 1933-36. He retired about ten years ago.

Mr Russell took an active interest in the Nova Scotia Association of Architects, having been a member of the council for several years, Vice-President in 1942 and President in 1943.

A. Edwin Priest

BOOK REVIEW

THE MODERN FACTORY by Edward D. Mills, F.R.I.B.A.

The Architectural Press, 13, Queen Anne's Gate, S.W.1. Price 30s net.

I doubt very much if the average architect in this country, when given the job of building a factory, goes through all the planning processes outlined in "The Modern Factory" by Edward D. Mills, F.R.I.B.A. (The Architectural Press, London).

Though written for British readers, the ideas expressed in this book would be readily adaptable for Canadian use, and if put into practice, greatly benefit not only industry, but all who have any contact at all with industry.

Mr Mills has done an excellent job in compiling data for planning a factory, from selection of sites to the design of social rooms for the employees. There are chapters on new structural techniques, lighting, heating, ventilating, decoration, and the primary requirements of various incidental buildings, such as warehouses, laboratories, administration, etc., which are so necessary to complete the modern-day factories. There are also some very interesting comments on the great need of landscaping the site of industrial buildings.

The book is concluded with a number of plates, which amply illustrate many of the author's expressions. Any architect who has hopes of a factory job would do well to study this volume and it might be an idea to see that his industrial client has a chance to borrow it and digest its contents.

A. G. Elton

COMPETITION

To select an architect for the proposed National Gallery of Canada at Ottawa, a national competition, in two stages, will be held. By May 1st, 1952, the programme may be obtained by writing to the professional adviser, Mr Eric Arthur at the School of Architecture, University of Toronto, Toronto, Ontario. Judges are Mr John Bland, Director of the School of Architecture, McGill University; Mr Alfred Barr, Director of the Museum Collection, Museum of Modern Art, New York; Mr Eero Saarinen, Architect, Bloomfield Hills, Michigan.

NOTICES

It is the intention of the Editorial Board to give an annual award for the best advertisement appearing in the *Journal* in a twelve-month period. The award, along with the names of the judges and their comments, will be announced at the Annual Assembly and will be published in the June issue of the *Journal.*

It is announced by the National Gallery of Canada that Scholarships in Industrial Design, to the value of $1,500.00 a year, are again available to Canadian students. Address all communications to The Secretary, National Industrial Design Committee, National Gallery of Canada, Ottawa, Ontario.

THE COVER

Excerpt from "Totem Poles" by Marius Barbeau

A being which figures largely in the clan legends of the Kwakiutl is the Tsonsoqoa, a wild woman who resides in the woods. She is represented as having enormous breasts and as carrying a basket, into which she puts children whom she steals in order to eat them. Her eyes are hollow and shine with a wild lustre. She is asleep most of the time. Her mouth is pushed forward, as she is, when awake, constantly uttering her cry, "ŭ, hŭ, ŭ, ŭ". This figure belongs to a great many clan legends, and is often represented on house posts or on masks.

Photograph courtesy of Mr Grant Crabtree, Ottawa

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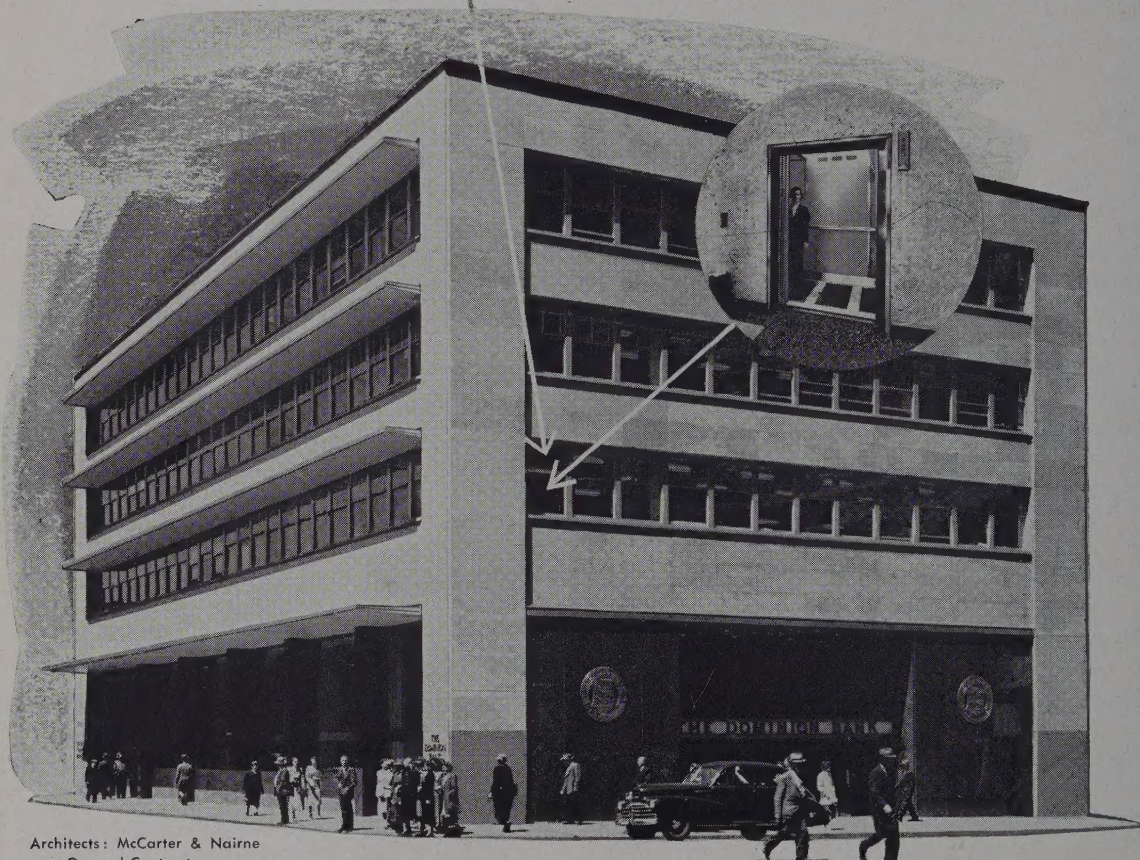

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